USER MANUAL

GlasCraft
DISPENSING EXCELLENCE

GUARDIAN

A6-6000 Dispensing System

THIS EQUIPMENT IS PROTECTED BY U.S.A. PATENT D546,840

THIS EQUIPMENT IS PROTECTED BY CHINESE PATENT ZL 200630130159.1

CE CERTIFIED

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For Your Reference ..... **INSIDE BACK COVER**

N/A = Non Applicable

Section 1 - Installation: Introduction

Before operating, maintaining or servicing any **GlasCraft** system, read and understand all of the technical and safety literature provided with **GlasCraft** products. If you do not have the proper or related manuals and safety literature for your **GlasCraft** system, contact your **GlasCraft** distributor or **GlasCraft,**Inc.

In this **GlasCraft** technical and safety publication, the following advisories will be provided where appropriate:

Is information about the procedure in progress.

Is imperative information about equipment protection.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ ELECTRICAL SHOCK HAZARD

Indicates a hazardous situation which, if not avoided, could result in electrical shock or serious injury.

The information in this document is intended only to indicate the components and their normal working relationship typical use. Each assembly should be directed by a **GlasCraft** distributor or made from the **GlasCraft** Assembly instructions provided.

This manual provides information for the assembly, operation, maintenance and service of this **GlasCraft** product as used in a typical configuration. While it lists standard specifications and procedures, some deviations may be found.

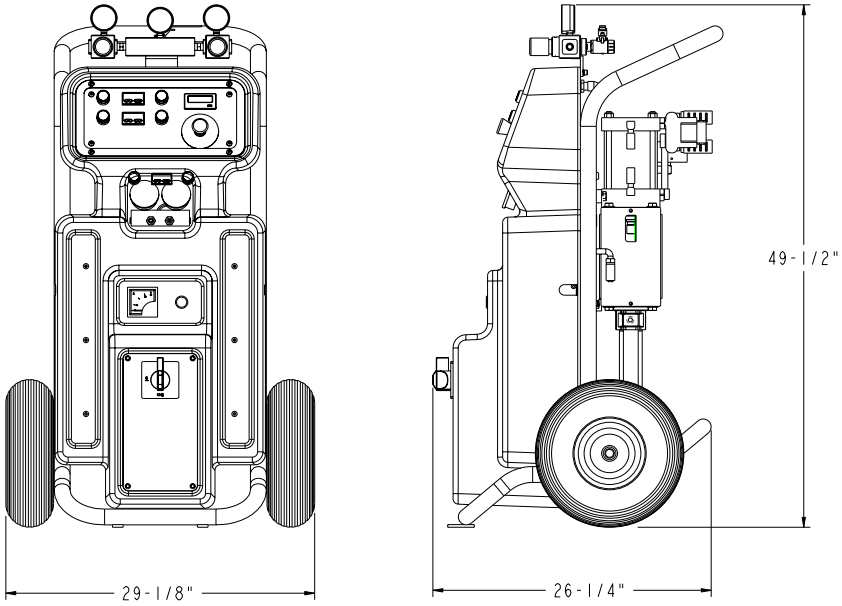
In order to provide our users with the most up-to-date technology possible, we are constantly seeking to improve products. If technological change occurs after a product is on the market, we will implement that technology in future production and, if practical, make it available to current users as a retrofit, up-date or supplement. If you find some discrepancy between your unit and the available documentation, contact your **GlasCraft** distributor to resolve the difference. **GlasCraft,** Inc. reserves the right to change or modify this product as it deems necessary.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting.

Model - A6-6000

Part Number	Description
23675-	A6-6000 UNIT
23950-02	PROBLER P2 GUN
22023-01	HIGH PRESSURE HOSE ASSEMBLY
18006-00	WHIP HOSE ASSEMBLY
23473-00	HEATER REPAIR KIT
GC-1398	USER MANUAL
59934-04	DIOCTYL PHTHALATE, 1 QT.
22094-00	REQUIRED TO COMPLETE THE HOSE ELECTRICAL CIRCUIT WHEN USED WITH 18006-00 WHIP HOSE

Section 1 - Installation: Specifications

Material Ratio:	1:1 (Fixed)
Material Viscosity:	200- 2000 Centipoise (Cps) @ AMBIENT
Output:	Pumps Rated: .042 Gallons Per Cycle .159 Liters Per Cycle
Operating Temperatures:	32º F (0º C) - 180º (82 º C)
Operating Psi:	22:1 RATIO 2200 PSI @ 100 PSI Air Max Working PSI 2420 PSI **Note: Overpressure switches are factory set at 2200 PSI.**
Purging: Constant	Automatic Pneumatic, Solvent-free, Constant
Electrical Requirements:	50 A @ 208/240 VAC,50/60 hz, Single Phase 20 A @ 208/240 VAC,50/60 hz. Three Phase 20 A @ 380 VAC, 50 hz. Three Phase
Compressed Air Requirements:	Base Unit: 1.0 GAL PER MINUTE – 17 CFM @ 100 PSI. 1.5 GAL PER MINUTE – 24 CFM @ 100 PSI. 2.0 GAL PER MINUTE – 33 CFM @ 100 PSI. **NOTE:** As output is increased, (achieved w/ chamber size on gun or spray tip), pressure drop will be greater. Heating capability will also drop.
Heaters:	6000 WATT HEATER
Maximum Hose Length:	300’ (Each Section 50’ x 3/8” I.D.)
Shipping Weight:	440 Lbs.
Overall Dimensions:	

Assembly Instructions

GlasCraft Systems are factory assembled. If any questions arise concerning air or electrical connections, please refer to illustrations located in the forward portion of this User Manual or contact your GlasCraft distributor.

Fluid Line Connection

The material hoses that bring Isocyanate and Polyol chemicals and the air from the machine to the gun should be connected as follows.

Required Tools:

Opened - end wrenches - 5/8", 3/4" , 13/16"

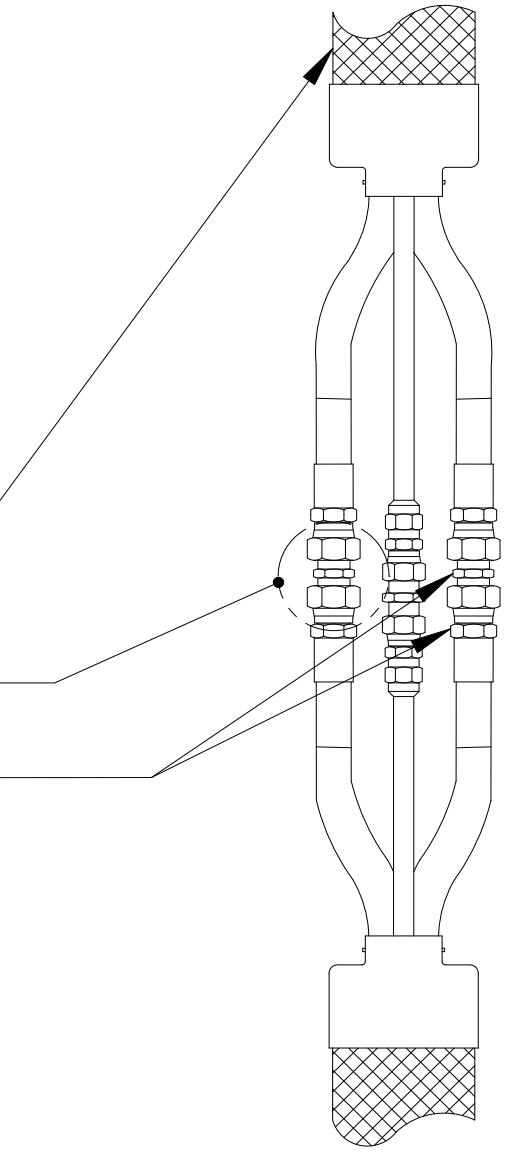
1. Lay hoses out straight.

2. Couple hoses together with supplied union fittings and tighten finger-tight.

3. **a.** Hold crimp fitting hex (3/4"), and union fitting together, allowing the hose to hold it's natural line.

b. Using the appropriate wrench (A-side 3/4" / B-side 13/16") tighten swivel fitting to union, not allowing crimp fitting or union to turn. Repeat on opposite side of union.

This practice is required on all connection points.
1) Hose @ machine
2) Hose @ gun
3) Adding additional hose sections

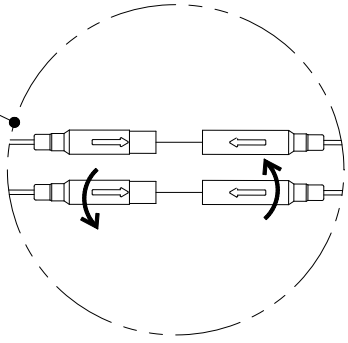


4. Plug hoses together, The TRU-FLOW hose plugs are a twist-lock design.

a. Push plugs together.

b. Twist to lock position.

Once connections are made, tape connections well enough to keep plugs from coming undone, damaged, etc.



Section 1 - Installation: Equipment Assembly

⚠⚠

Main power from power source should be disconnected or turned off to console before making hose connections.

1. Connect Hose Assembly to the system. The swivel fittings on the Hose assembly are sized differently and will attach only one way.

2. Connect the twist-lock plugs to the plugs on the front of the system. Line the arrows up on each plug, push them together and twist to lock. (see hose installation)

3. Connect trigger air line to the air line on the system.

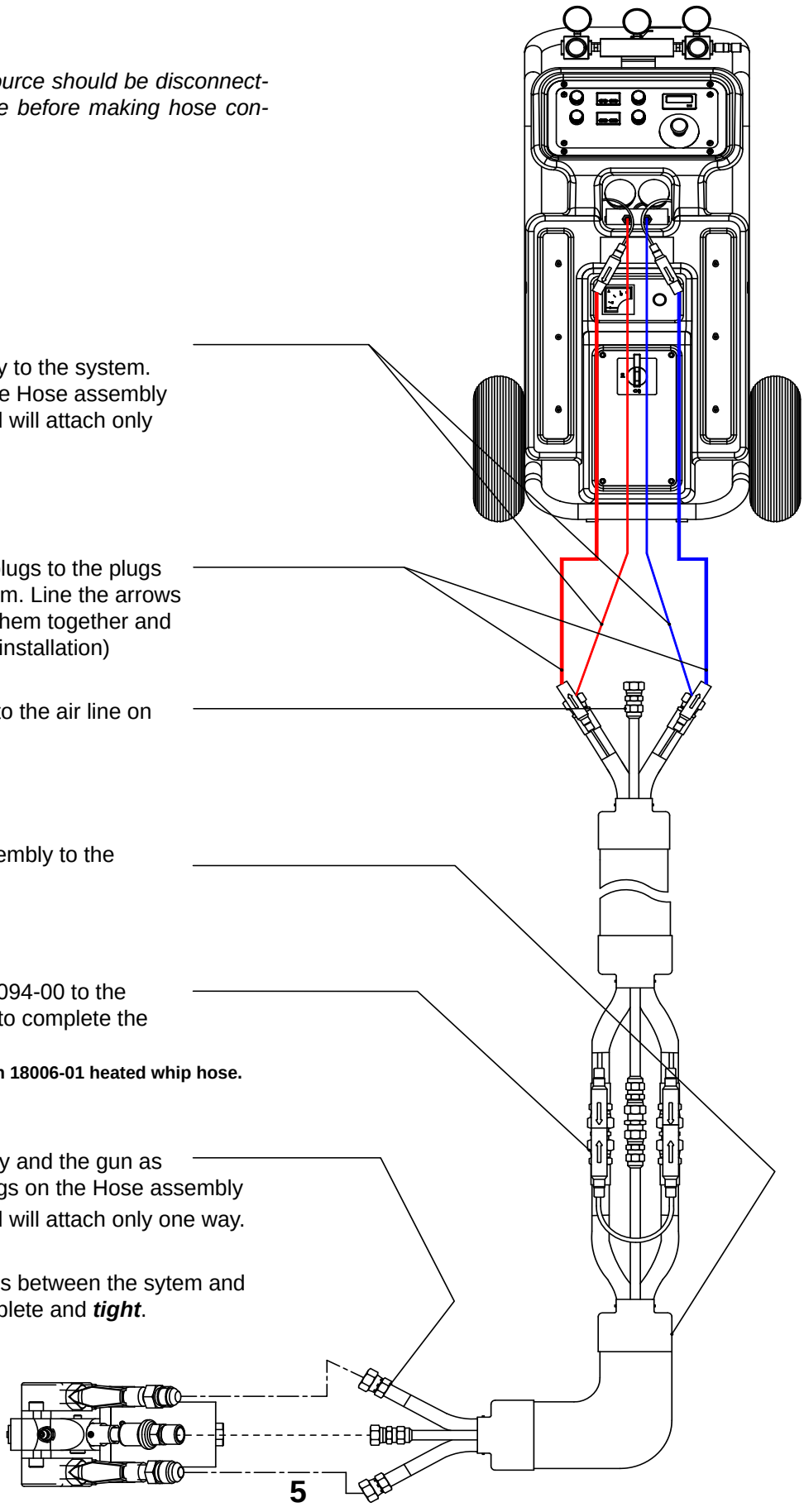
4. Connect whip hose assembly to the material hose.

5. Connect jumper p/n: 22094-00 to the plugs on material hose to complete the circuit.

Note: **Jumper not needed with 18006-01 heated whip hose.**

6. Connect Hose Assembly and the gun as shown. The swivel fittings on the Hose assembly are sized differently and will attach only one way.

7. Fluid and air connections between the sytem and gun should now be complete and ***tight***.

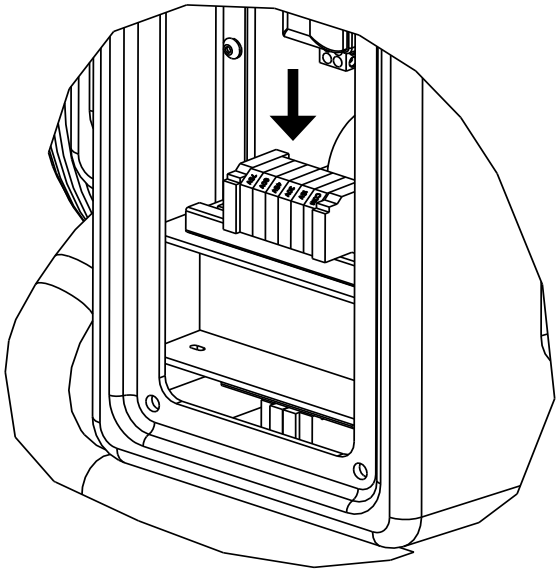


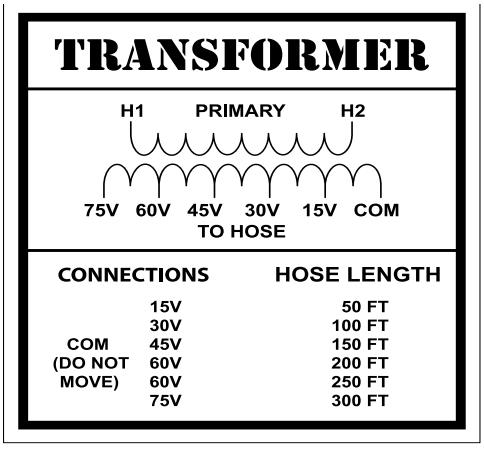
Electrical Connections

Electrical connections must be checked on a periodic basis.

1. 208/240 volt single phase
L1 L2 GROUND
208/240 volt three phase
L1 L2 L3 GROUND
380 volt three phase
L1 (black)
L2 (brown)
L3 (black)
L4 (blue)
GROUND (green)

2. The transformer can now be set for proper hose length.





⚠ ⚠ *When Main Power to system console is on, the white and black wires in the console are **always live!** Disconnect or turn **off** Main Power source before opening console to make any repairs or before making any electrical repair of any type to the system.*

⚠ ⚠ *If you do not understand the electrical hook-up described above, consult your local GlasCraft distributor OR a qualified electrician.*

Air Supply Connection

An air source which delivers a constant 25 CFM @ 90-110 PSI (708 liters @ 6.3-7.7 BAR) and does not exceed 125 PSI (14 BAR) should connected directly to the Ball Valve, P/N 21666-01, mounted on the Proportioning Unit Air Motor. (see “Typical System Connection Diagram” illustration) The air line to the Console should be a minimum 1/2 inch inside diameter (I.D.) if it is 25 feet or less in length. Should it be over 25 feet in length, the air line should be a minimum 3/4 inch I.D.

Section 2 - Operation: Start-Up Instructions

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Never leave machine unattended while system power is on or system is running.
System running is defined as: preheat cycle of the hose heat, primary heaters, or any pump operation.
Machine operators must be familiar with the component functions and operation of the machine.

Pre-Operation Check List

A. Check that all fittings are securely tight.

B. Check electrical hook-up (qualified electrician recommended).

C. Main power switch on Control Box should be switched to ***OFF*** position.

D. Air Regulator turned (counter clock-wise) to ***OFF*** position.

E. Hose Control and Primary Heater Control to ***OFF*** position.

⚠

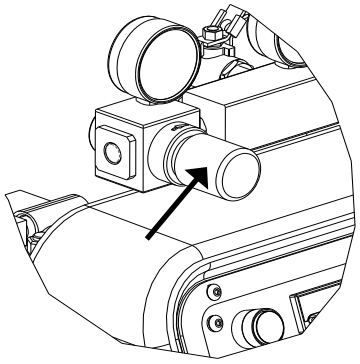
Do not place any part of the body in the path of the material spray.
Do not point the gun at or near other personnel.
Do not look into the Mixing Chamber orifice at any time.
Because of the hazardous materials used in this equipment, it is recommended that the operator use an air mask, goggles, protective clothing, and other safety equipment as prescribed by current regulations, recommendations of the chemical suppliers, and the laws in the area where the equipment is being used.

Initial Start-Up Procedure

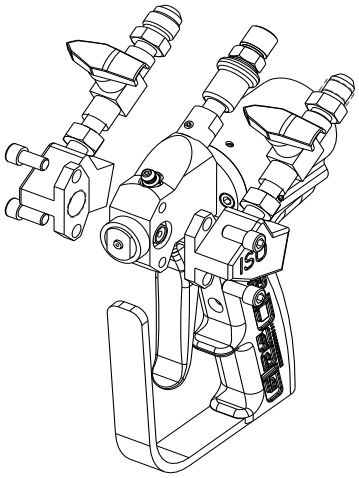
With all material and air lines connected and power cable attached, the system is now ready for start-up.

Filling The System

1. Adjust Air Regulator to 20 PSI to fill system. Air Motor will cycle slowly to fill Pumps, Heaters and Hoses and stop.

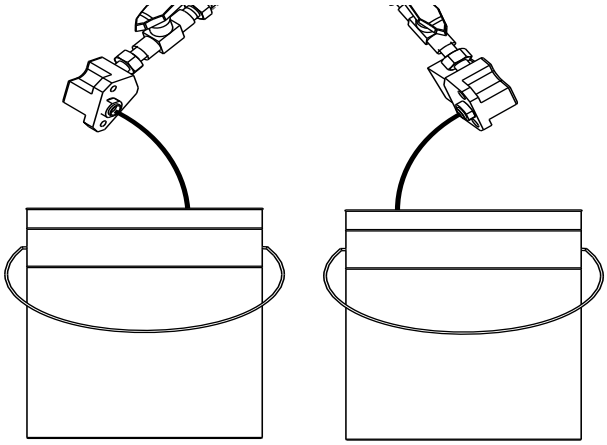


2. Remove ISO & POLY side blocks from gun.



PROBLER P2
MAKE SURE VALVES ARE OFF

3. Place separate clean containers under each individual side block. **Slowly** open material valves (black arrow forward) on each side block to allow trapped air to escape the hose and material to flow into the containers until all air is purged from the material system.



Remember to dispense one to two gallons of material to clear the system of grease and plasticizer that was used during factory testing.

4. Close manual material valves. Material pressure gauges should now register approximately equal pressure. If one side registers considerably more pressure than the other side, go to the high pressure side and bleed off some pressure by slightly opening the manual material valve on the side block over the container. Bleed pressure until both sides are approximately the same pressure.

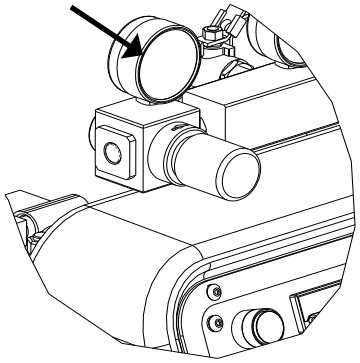
5. Dispose of waste material properly and in accordance with chemical suppliers instructions and local, state and federal regulations.

Before re-assembling Side Blocks, lubrication can be applied by dabbing a white lithium grease into holes inside of Gun Front Housing and wiping grease over SideBlock Seals. Grease will purge itself when air valve is turned on at Gun and Gun is triggered.

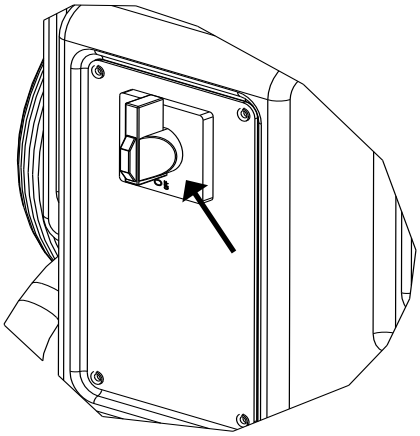
6. Clean and lubricate Side Blocks and Seals thoroughly and re-assemble on Gun. Make certain that the side block screws are tighten securely.

7. Refer to material manufacturers operating instructions for proper preparation of material, i.e, mixers, etc.

8. Leave Air Regulator at 20 PSI



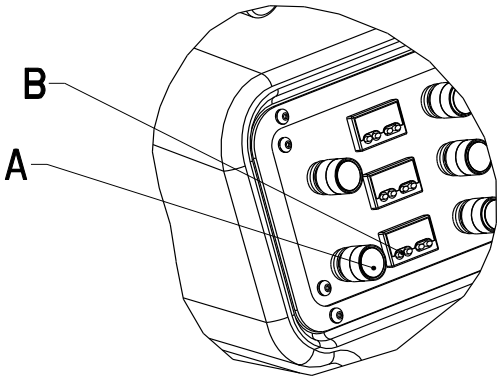
9. Turn main power Switch to ***ON*** position.



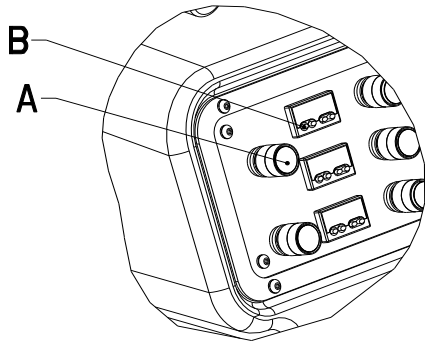
10. Turn on Hose Control:

a. Push in the green power button.

b. Press up or down arrow buttons on the controller until desired temperature setting is achieved.



11. Turn on the ISO & POLY Heater control:
- **a.** Push in green power button.
- **b.** Press up or down arrow buttons on the controller until desired temperature setting is achieved.



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Straighten hose out flat, to avoid uneven heating and damage to internal wiring of the Hose Assembly.

Allow enough time for hose to warm up (approximately 15- 20 minutes). Remember that the heated hose does not have a delta rating. The heated hose's function is to maintain the heat generated by the primary heaters during system operation, and preheat material during initial start-up. The hose should be set to maintain a temperature close to the set point of the heaters.

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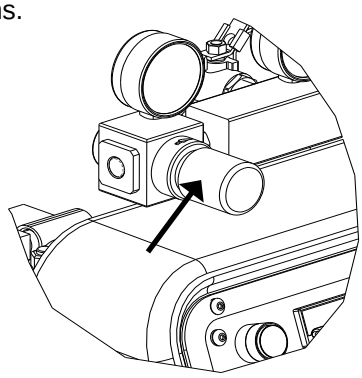
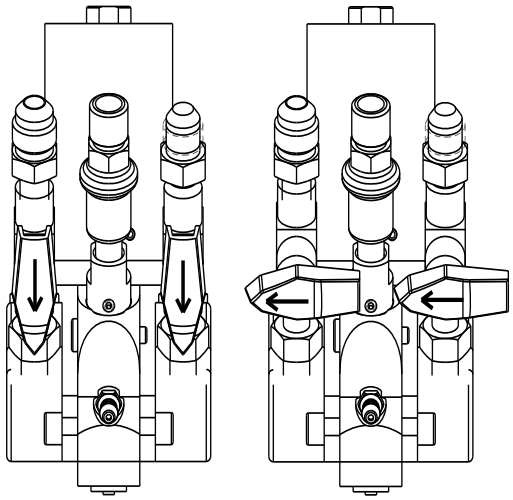
Due to the expansion of urethanes when heated, it is imperative that on cold start-up of the system that the heaters be turned on and allowed to reach operating temperatures before the Main Pump Air Regulator is adjusted to the desired spray pressure. If you do not allow the heaters to reach operating temperature before adjusting air pressure, the material pressure will exceed the set point of the over pressure switches causing the system to shut down.

12. Adjust Main Air Regulator to material suppliers specifications.



13. Turn Purge Air and Material Valves ON at Gun.



ON **OFF**

14. Relieve any excess pressure by triggering the gun.

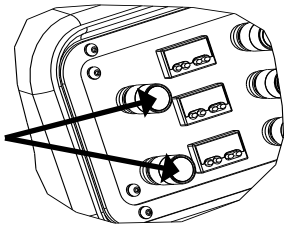
The Emergency Stop Switch is located on the bottom right side of the control Panel, when depressed, it will shut down the power and activate the Air Dump Valve. To reset, turn handle on push button.

15. The system is now ready for operation.

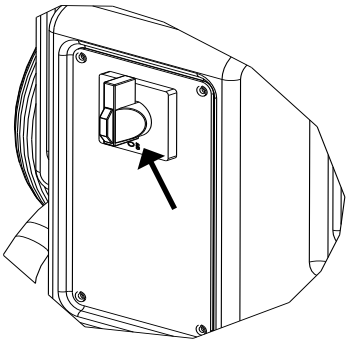
Section 2 - Operation: Shut-Down Instructions

Daily Shut-Down Procedure

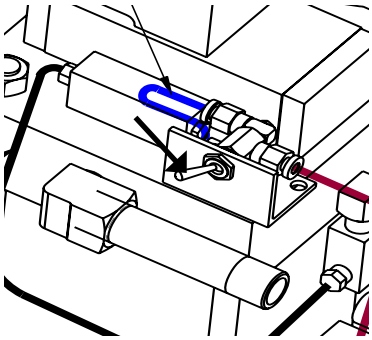
1. Turn off hose and heater controllers.



2. Turn off main power switch.

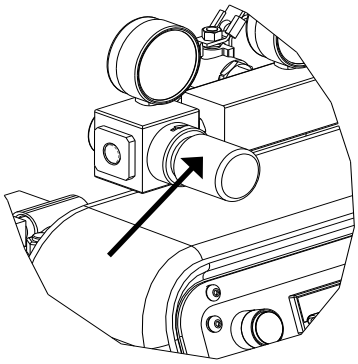


3. Flip retract switch to the "*retract position*" and trigger the gun until pumps are in the down position.



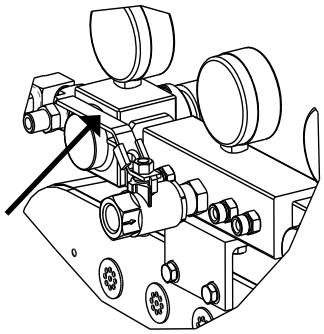
4. Perform gun maintenance. (See gun manual)

5. Reduce main air regulator pressure to zero.



6. Visually inspect the entire system for leaks.

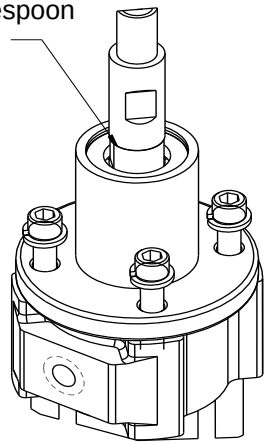
7. Turn off main air supply and main power.



8. Coil heated hoses with a minimum four foot diameter to avoid kinking and subsequent damage to the internal electrical wiring.

9. Check and lube top of the fluid section.

Wipe off residual material and add a tablespoon of DOP,DBP



⚠

Do not bleed fluid pressure from the system.

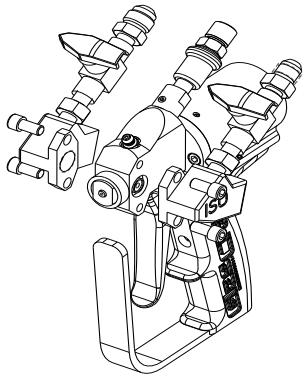
Extended Shut-Down Procedure

There are many different procedures that are being followed for extended machine shut down. Because the system is designed to be compatible with most urethane formulations, GlasCraft recommends that the system should be stored with urethanes instead of solvents, plasticizers, etc. Certain considerations have to be adhered to when an extended shut-down is being performed.

The following procedure is for long extended shut-down periods.

Power should be disconnected and all air regulators turned down to zero.

1. Remove side blocks from the gun and relieve pressure from the system.



PROBLER P2

2. Use a suitable solvent to flush the fluid circuits. To determine the compatibility of solvents with material being used. Always check with material supplier.

3. Increase transfer pump pressure until fluid movement occurs.

If fluid movement does *NOT* occur @ 100 psi of air on transfer pumps, increase main pump pressure until the main proportioner *SLOWLY* starts cycling.

4. Once primary material is flushed from the system, reduce the main air pressure to zero or flip the retract switch to the "***retract position***" and trigger the gun until the pumps are in the down position.

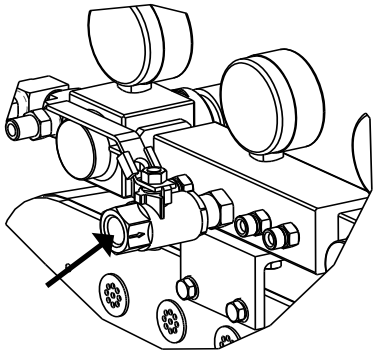
5. If the solvent used to flush the system also contains placticizer, ensure that all primary material is flushed from the system and close the ball valves @ the gun.

6. Leave the pumps in the full down stroke position with approximately 200-500 psi. on the fluid gauges.

7. If plasticizer is required to chase out solvent, cycle main pumps until the system is full of plasticizer, then close valves and leave the pumps in the full down stroke position with 200-500 psi.

Section 2 - Operation: Shut-Down Instructions

8. Turn off main air supply and disconnect air line from the system.



9. Generously coat the exposed transfer pump shafts with lithium grease.

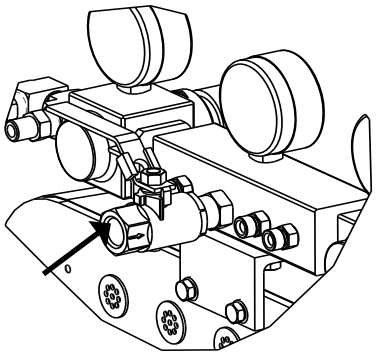
10. Coil the heated hoses with a minimum four foot diameter to avoid kinking and subsequent damage to the internal electrical wiring.

11. For gun shut down, follow the procedure from the gun manual.

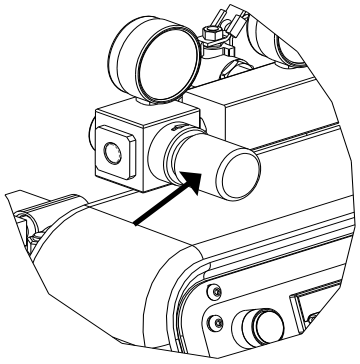
12. The length of time a system is shut down, and the climate conditions it's stored in will determine how often the system should be purged and refilled. Usually every 2 - 4 weeks the following procedure should be followed.

Purge and Refill Procedure

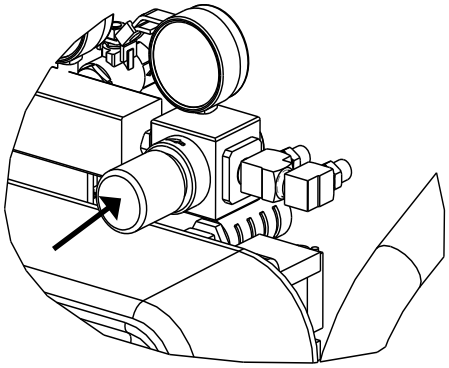
1. Connect the main air line to the system.



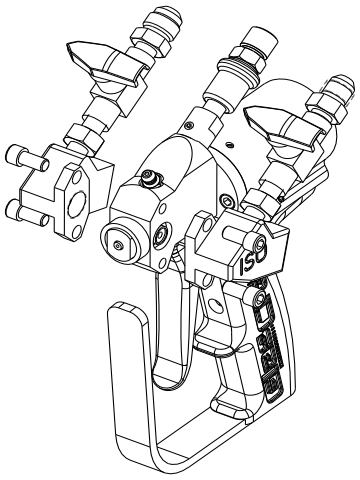
2. Adjust main air regulator to 20 psi.



3. Adjust transfer pump regulators to approximately 40 psi.

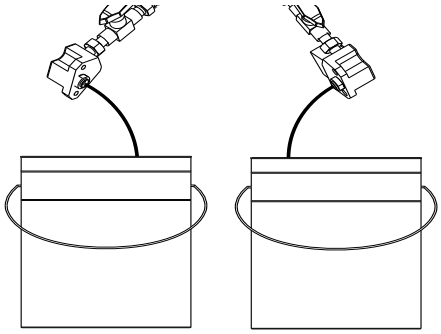


4. Remove the side blocks from the gun.



PROBLER P2

5. Open both side blocks simultaneously into separate containers and dispense approximately 1-1/2 - 2 gallons of material from each side or until all plasticizer is purged from the system. Stop the pumps in the down position.



6. Close both side blocks simultaneously and wipe off residue from the side block seals. Regrease and attach both blocks to the gun.

7. Mix and properly dispose of purge material.

⚠

Before performing any repairs on the system,
ALL AIR and FLUID PRESSURES SHOULD BE RELIEVED TO ZERO (BLEED-OFF)!

To relieve Air and Fluid pressures:

System Console:
1. Turn OFF valves that supply material to the Pumps.
2. Turn OFF Main Air Regulator on Air Motor.

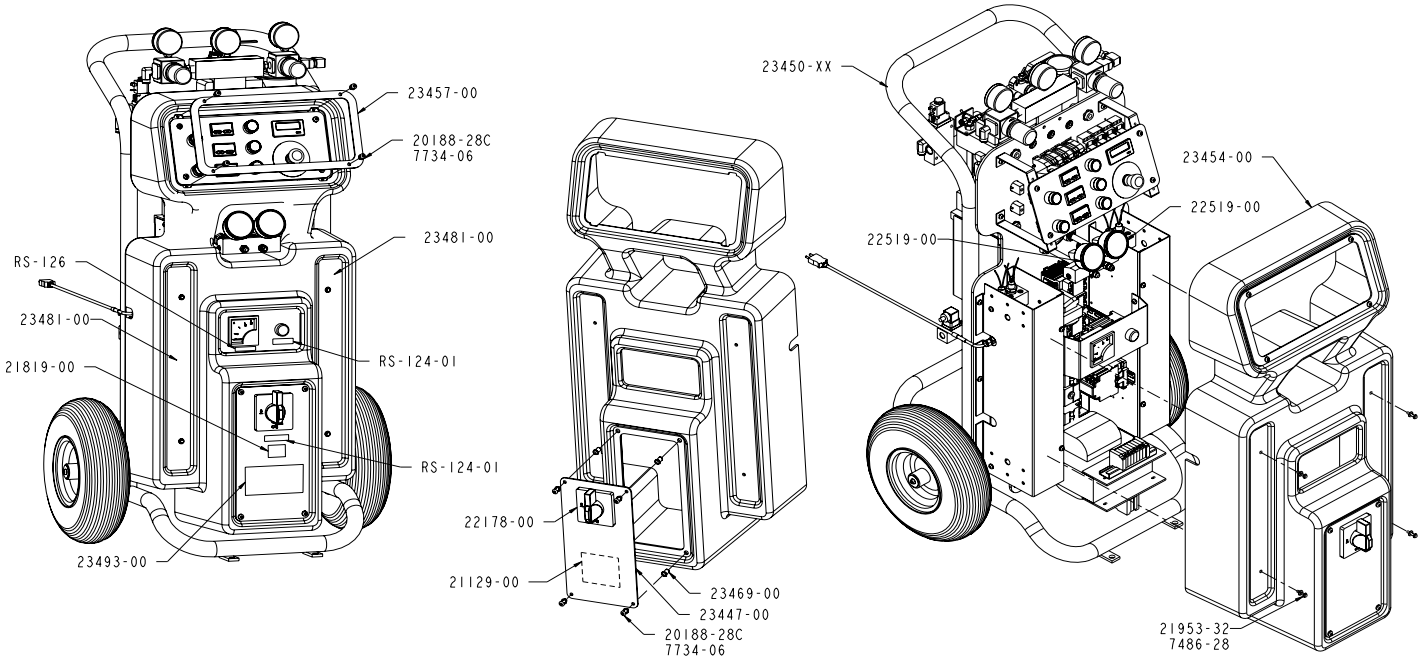
Gun:
1. Open both Side Block Material Valves.
2. Turn ON Air Switch.
3. Point Gun into a clean, suitable container and trigger Gun until material flow stops.
4. Fluid pressure gauges must read zero (0), if not, trigger Gun until the fluid pressure gauges do read zero (0) pressure.
5. Turn OFF Side Block Material Valves.
6. Trigger Gun several more times to purge any material remaining in Gun. Turn OFF air Switch.
7. Unless system is to be returned to service at once, follow DAILY SHUT-DOWN PROCEDURE

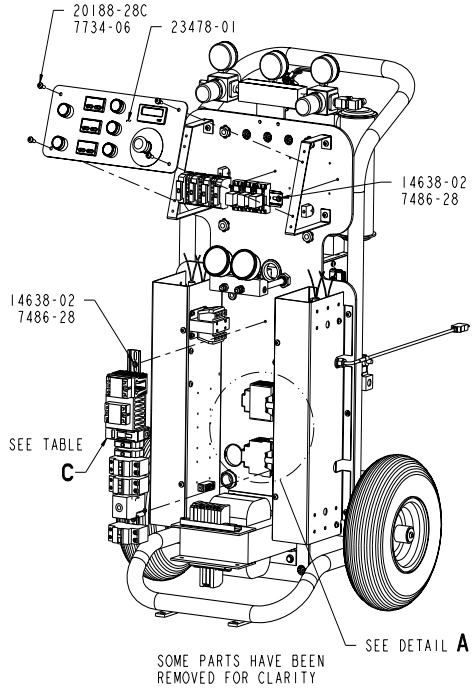
⚠ ⚠

Before performing any repairs on any part of the system,

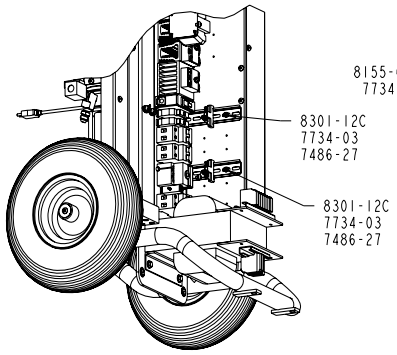
PLACE ALL CONTROLS ON THE MACHINE AND THE MAIN POWER SOURCE IN THE OFF POSITION AND DISCONNECT THE ELECTRICAL POWER CABLE FROM THE MAIN POWER SOURCE!

23675-XX Unit Assembly

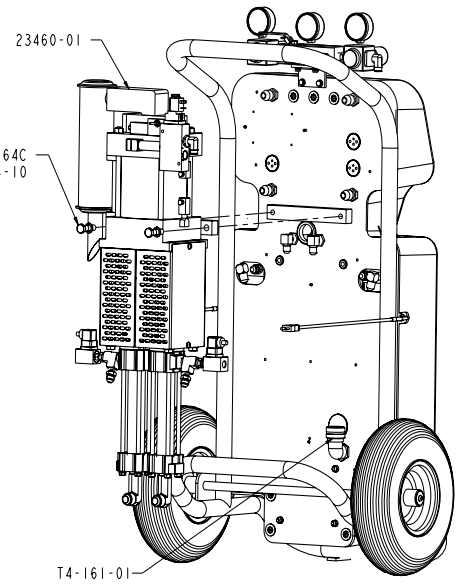




SOME PARTS HAVE BEEN
REMOVED FOR CLARITY

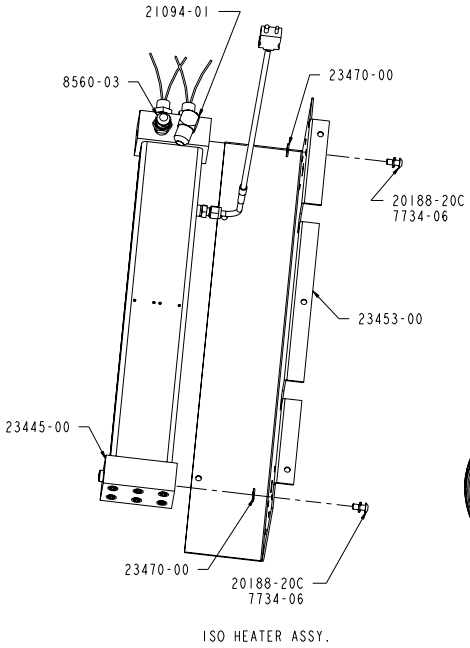


DETAIL A
SOME PARTS HAVE BEEN
REMOVED FOR CLARITY

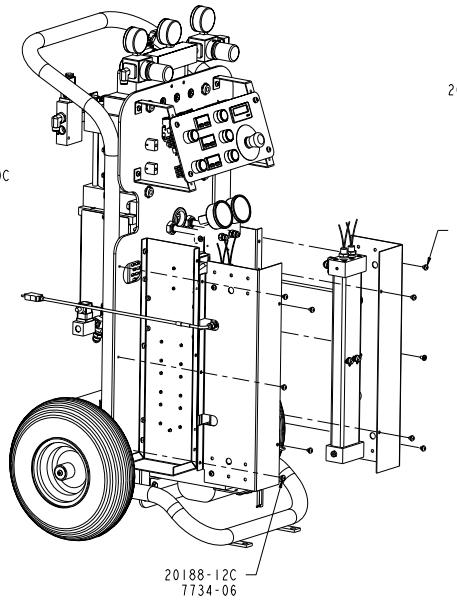


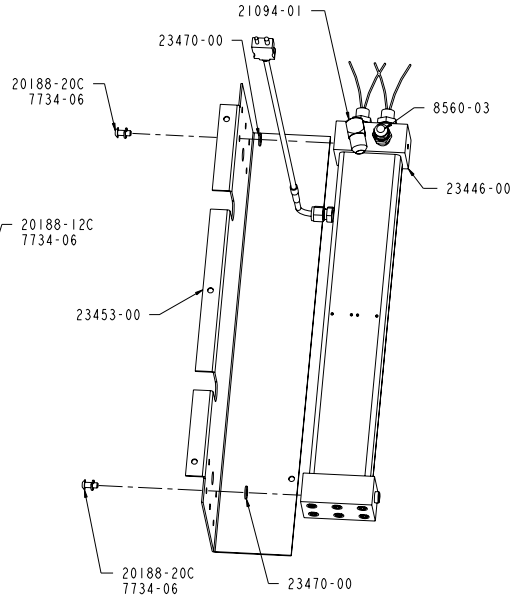
GLAS CRAFT P/N	C	# PHASES	VOLTAGE	POWER CABLE P/N
23675-01	23479-01	1	220	22509-00
23675-02	23479-01	3	220	T4-163-04
23675-03	23479-03	3	380	22718-01

23675-XX Unit Assembly

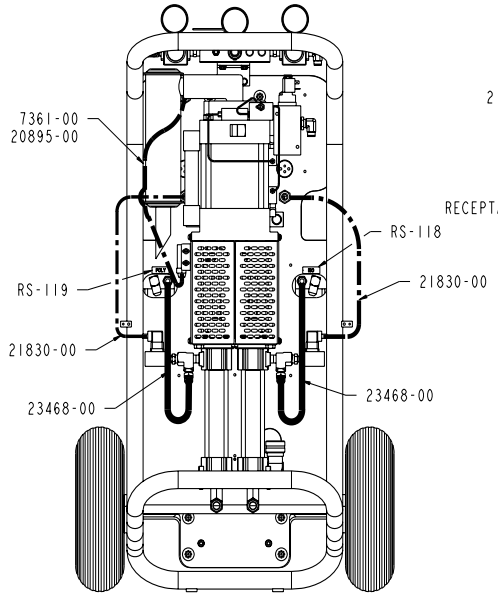


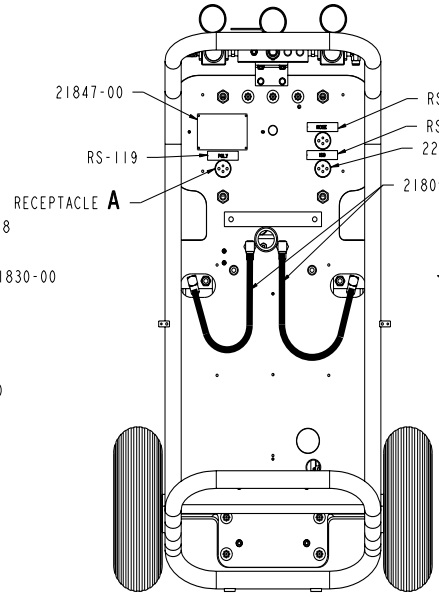
ISO HEATER ASSY.

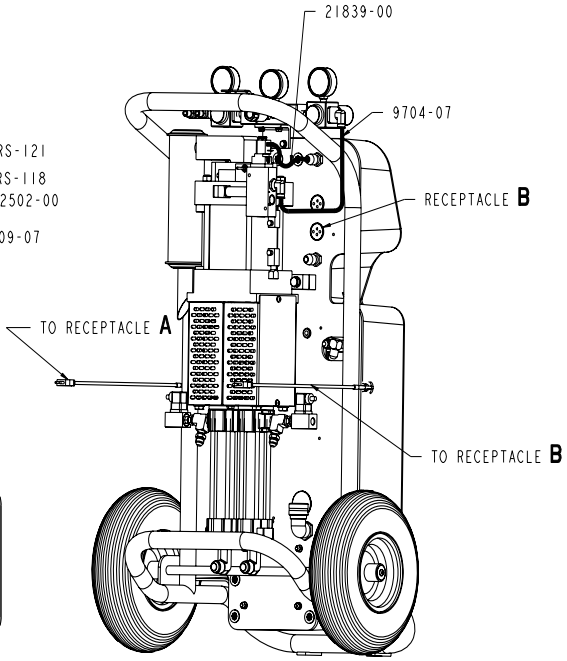




POLY HEATER ASSY





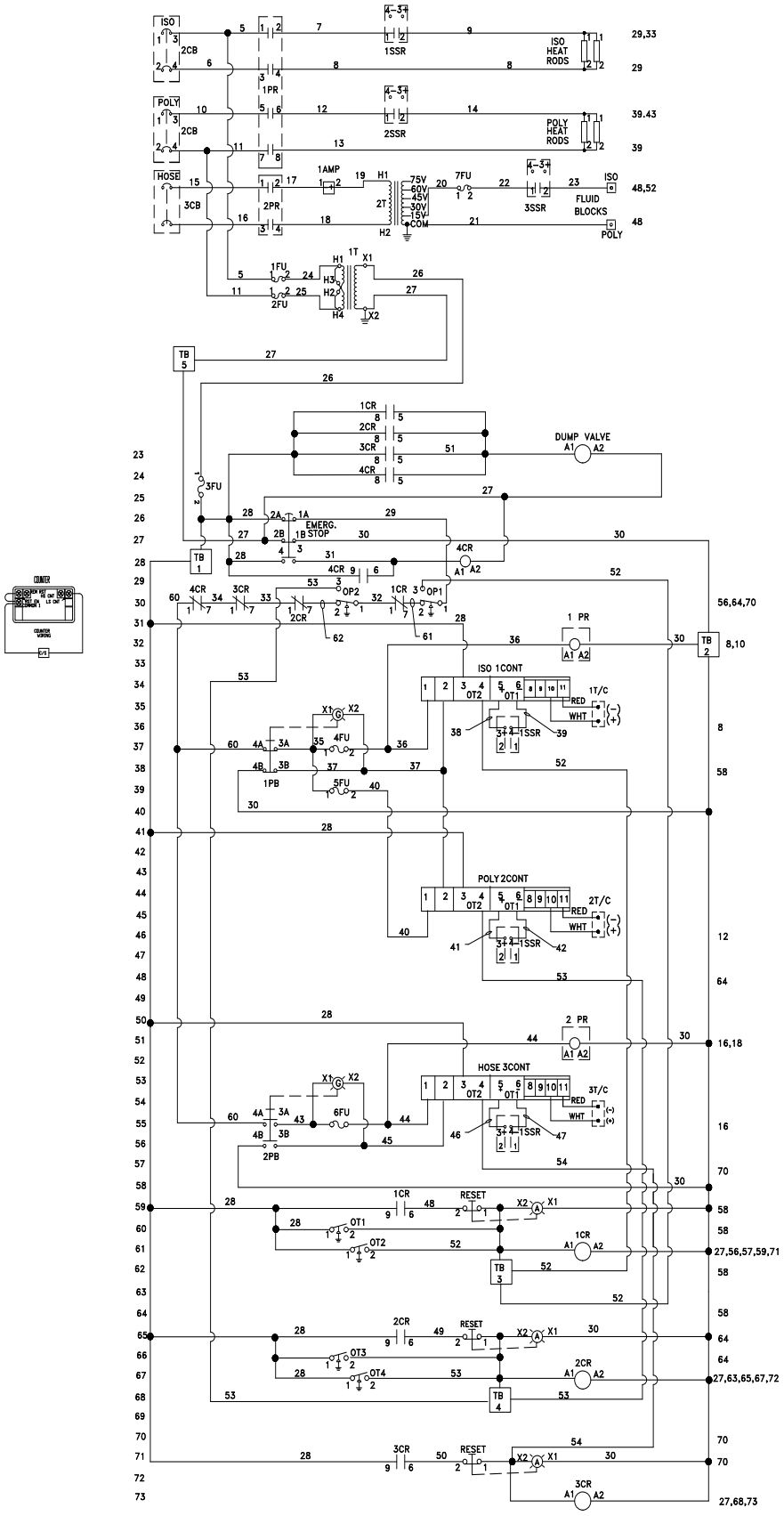


23675-XX Parts List

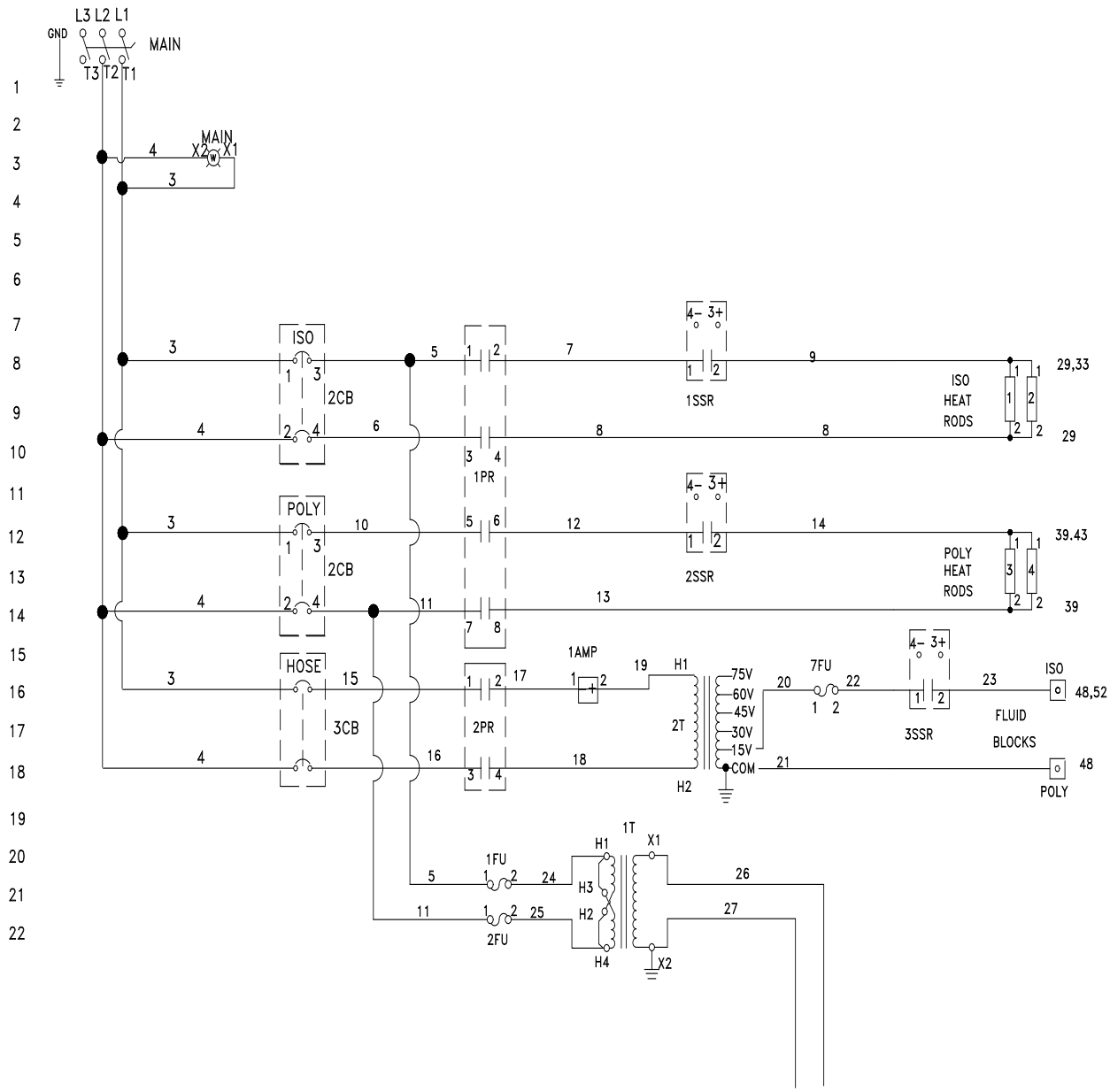
Part Number	Description
RS-118	ISO DECAL
RS-119	POLY DECAL
RS-121	HOSE DECAL
RS-124-01	MAIN DECAL
RS-126	HOSE CURRENT DECAL
14638-02	RIVET
19818-02	TERMINAL LUG
20188-12C	SCREW
20188-20C	SCREW
20188-28C	SCREW
20655-06	ELBOW FITTING
20895-00	CABLE
21094-01	ELBOW FITTING
21110-00	#6 WIRE
21129-00	TRANSFORMER DECAL
21150-00	TERMINAL LUG
21819-00	LIVE WIRE DECAL
21839-00	DIN CONNECTOR
21847-00	CE PLATE
21874-00	THERMOCOUPLE
21953-32	SCREW
22088-03	TWIST-LOCK PLUG
22088-08	TWIST-LOCK PLUG
22178-00	ON/OFF POWER SWITCH
22502-00	CIRCULAR PANEL JACK
22509-00	CONTROL CABLE
23445-00	HEATER ASSEMBLY
23446-00	HEATER ASSEMBLY
23447-00	BOTTOM PLATE
23450-XX	GUARDIAN HYBRID ASSEMBLY
23453-00	HEATER COVER
23454-00	FIBERGLASS SHELL
23457-00	CONTROL PANEL RING
23460-01	GUARDIAN PUMP ASSEMBLY
23468-00	HOSE
23469-00	RIVET NUT
23470-00	FIBER WASHER
23478-01	CONTROL PANEL ASSEMBLY
23479-	ELECTRICAL ASSEMBLY
23481-00	BLACK DECAL
23493-00	GUARDIAN DECAL
3201	LUG RING
3795-00	TERMINAL LUG RING

Part Number	Description
3800-03	WIRE
3800-08	WIRE
7208-02	WIRE NUT
7361-00	TERMINAL LUG RING
7486-05	WASHER
7486-28	WASHER
7734-06	LOCK WASHER
7734-10	LOCK WASHER
8155-64C	SCREW
8560-03	FITTING
8846-03	WIRE
8847-08	WIRE
9704-07	TUBING

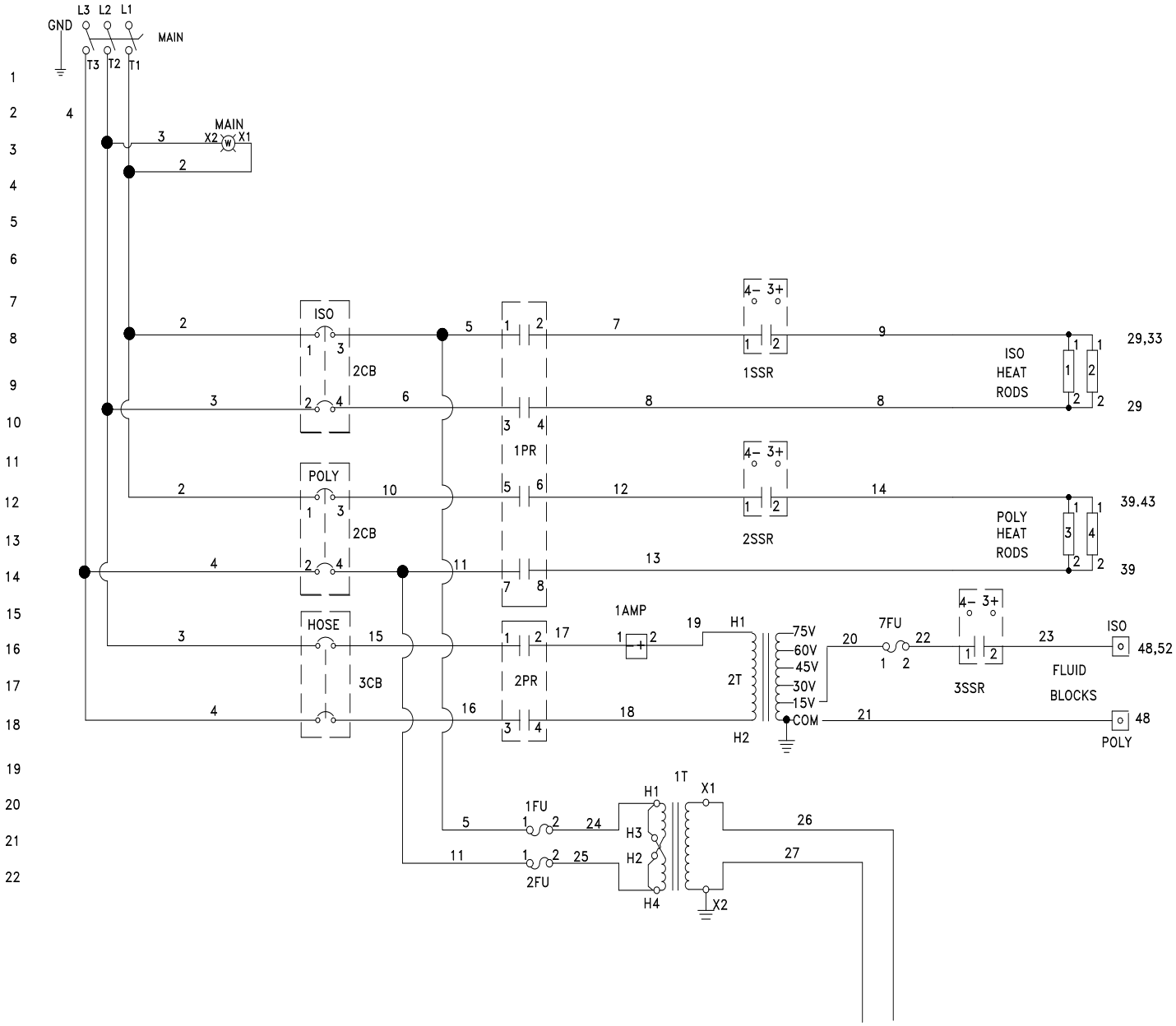
23675-XX Generic System Schematic



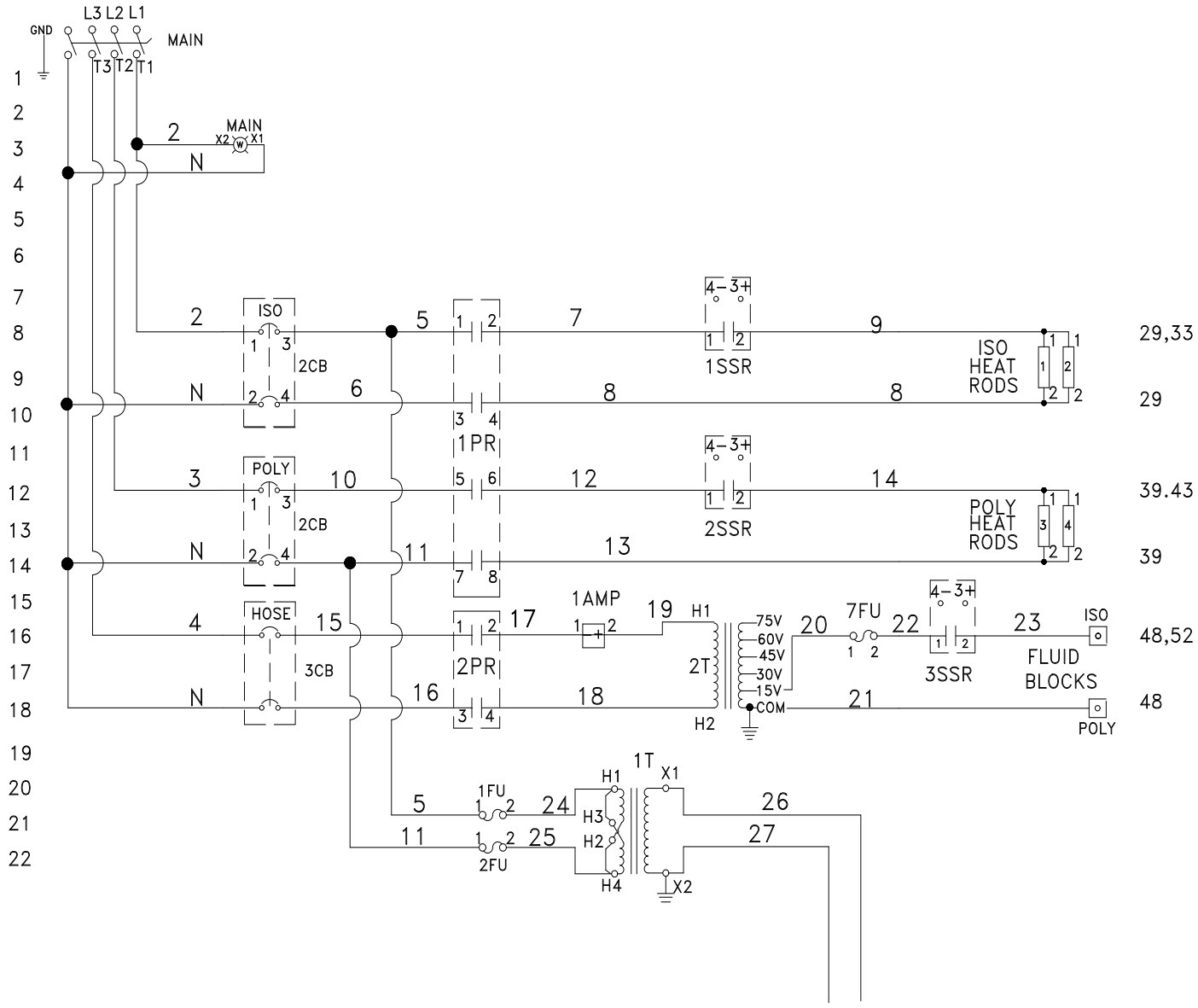
23675-XX System Schematic 220V Single Phase



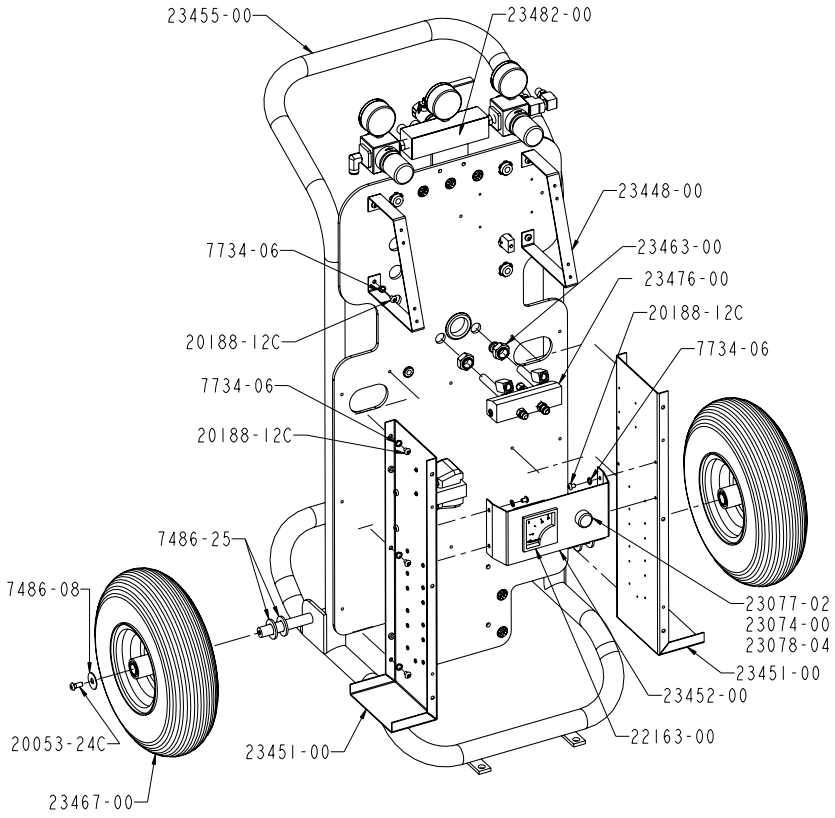
23675-XX System Schematic 220V Three Phase



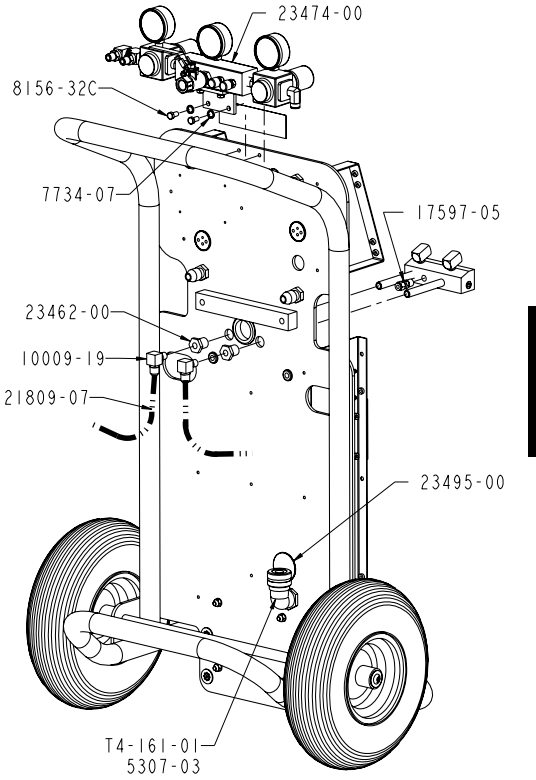
23675-XX System Schematic 380V Three Phase



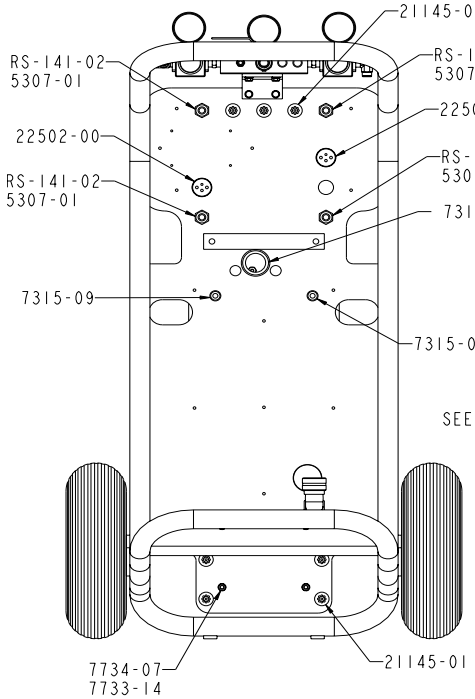
23450-XX Hybrid Assembly



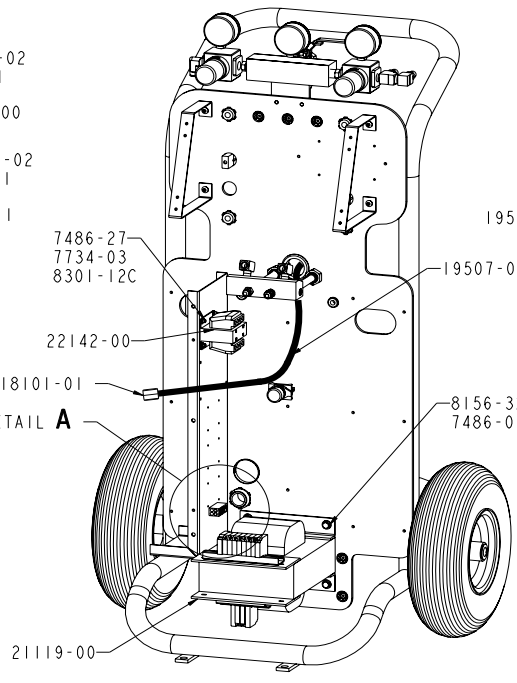
SOME PARTS REMOVED FOR CLARITY



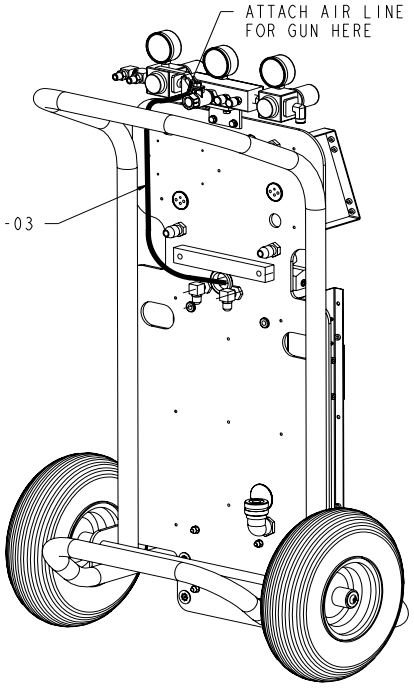
SOME PARTS REMOVED FOR CLARITY

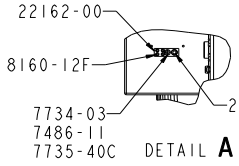


SOME PARTS REMOVED FOR CLARITY



SOME PARTS REMOVED FOR CLARITY



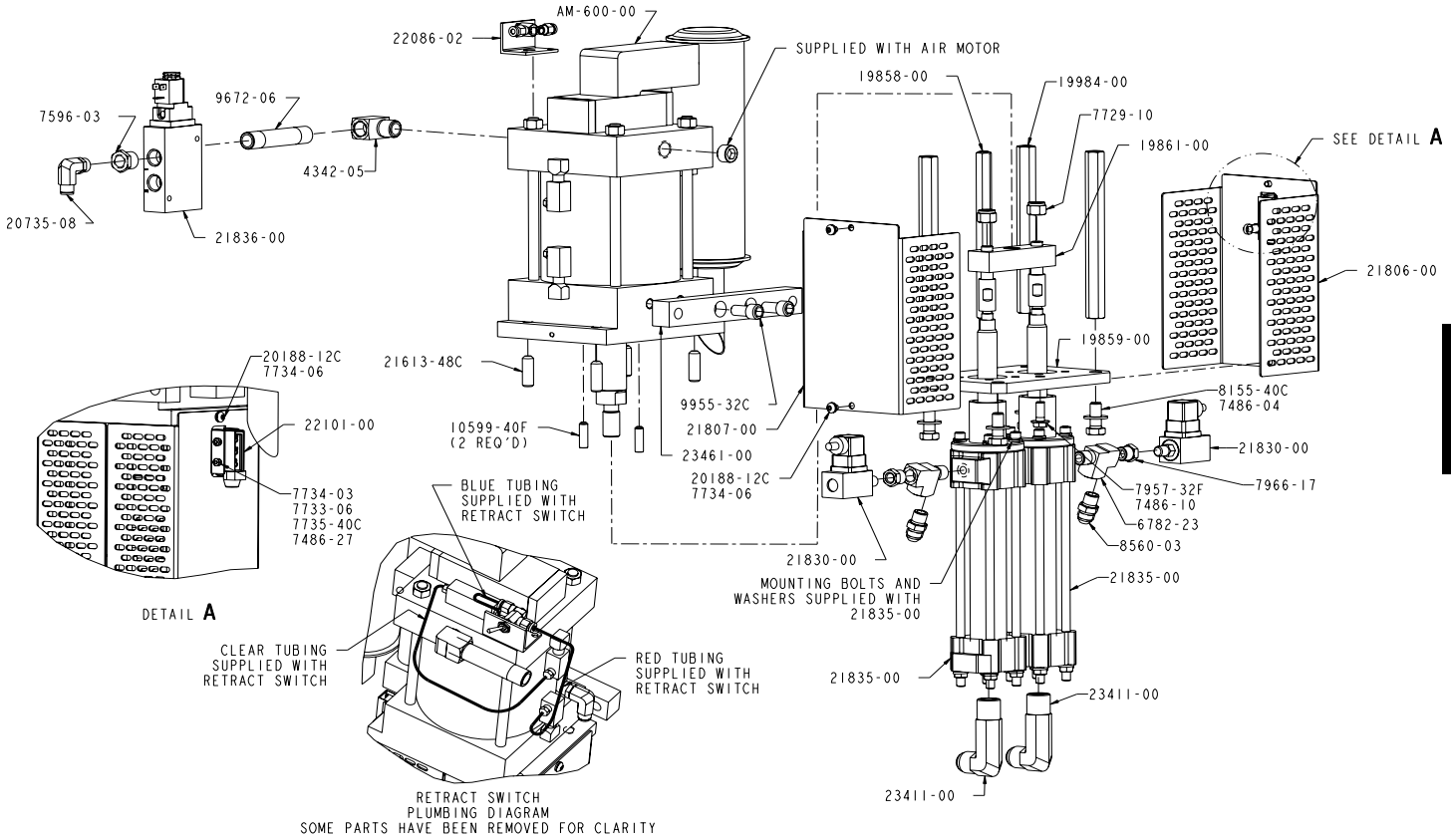


23450-XX Hybrid Assembly

Part Number	Description	Qty.
RS-141-02	CORD GRIP	4
T4-161-01	CONNECTOR	1
10009-19	ELBOW FITTING	2
17702-00	PILOT LAMP	1
18101-01	FITTING	1
19507-03	AIR HOSE	1
20188-12C	SCREW	14
20226-00	SET SCREW	1
21119-00	TRANSFORMER	1
21145-01	VENT PLUG	7
21809-07	MATERIAL HOSE	2
21866-00	COUPLING PLATE	1
21886-00	LAMP MOUNTING BLOCK	1
22142-00	TRANSFORMER	1
22150-02	PILOT LIGHT	1
22162-00	CONNECTOR	1
22163-00	AMMETER	1
22502-00	PANEL JACK	2
23448-00	HANGER	2
23451-00	HEATER COVER	2
23452-00	AMMETER BRACKET	1
23455-00	2 WHEEL CART	1
23462-00	FITTING	2
23463-00	BULKHEAD NUT	2
23467-00	WHEEL	2
23474-00	AIR MANIFOLD	1
23476-00	FLUID MANIFOLD	1
23482-00	MANIFOLD DECAL	1
5307-01	CONDUIT NUT	4
5307-03	CONDUIT NUT	1
5363-01	COTTER PIN	2
7315-09	RUBBER GROMMET	2
7315-11	RUBBER GROMMET	1
7486-07	WASHER	4
7486-11	WASHER	1
7486-27	WASHER	5
7733-14	HEX NUT	4
7734-03	LOCK WASHER	5
7734-06	LOCK WASHER	14
7734-07	LOCK WASHER	6
7735-40C	SCREW	1
8156-32C	SCREW	6
8160-12F	SET SCREW	4
8301-12C	SCREW	4

Part Number	Description	Qty.
1017-00	FITTING	3
18199-02	AIR REGULATOR	2
18318-02	AIR GAUGE	2
18318-04	AIR GAUGE	1
20655-04	ELBOW FITTING	1
21666-01	BALL VALVE	1
23449-00	“L” BRACKET	1
23459-00	AIR MANIFOLD	1
398	OILER CAP	2
399	OILER CAP GASKET	4
4342-04	ELBOW FITTING	1
6782-03	TEE FITTING	1
7734-07	LOCK WASHER	2
8115-03	FITTING	2
8115-06	FITTING	2
8115-07	FITTING	1
8156-24C	SCREW	2

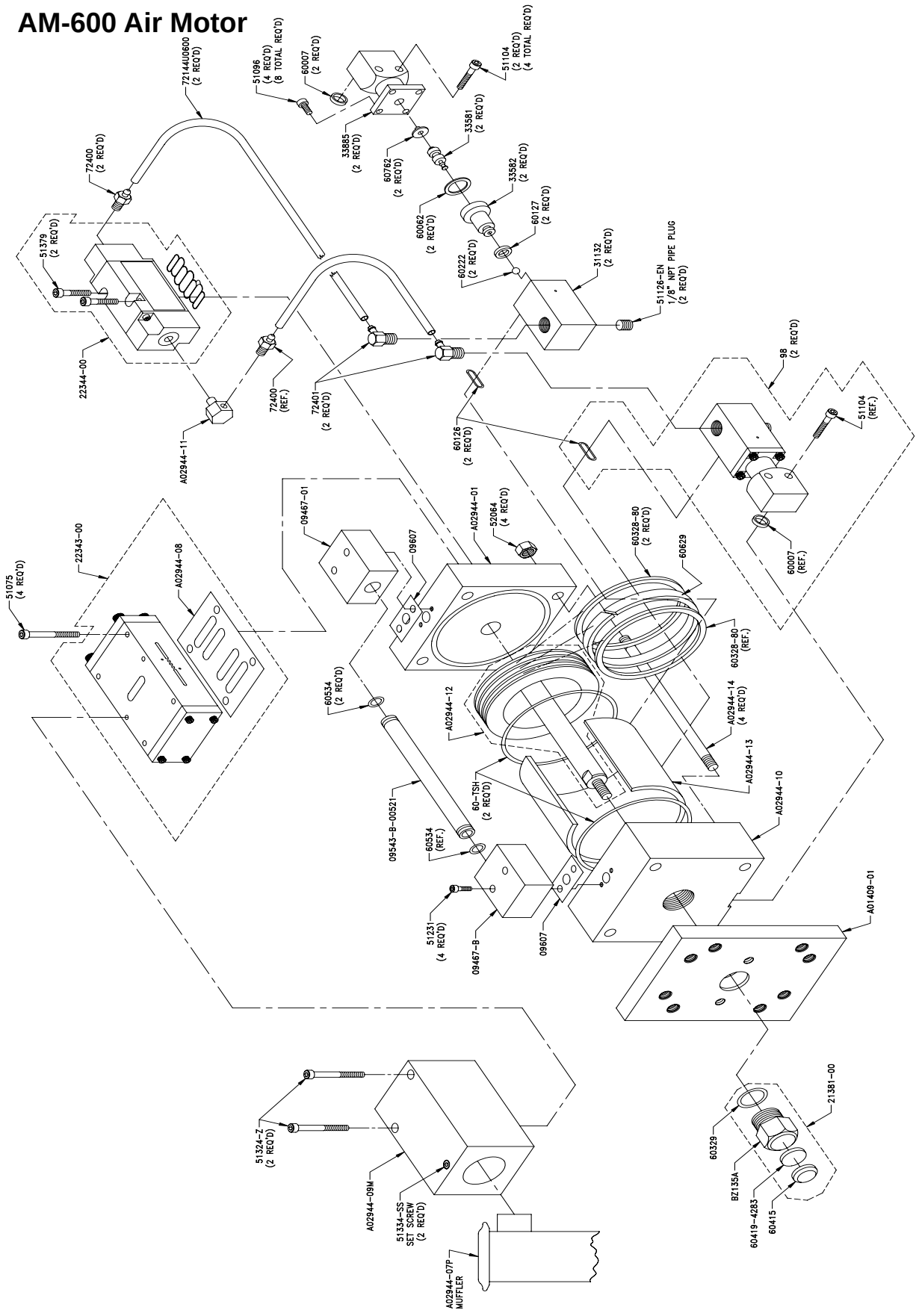
23460-01 Proportioning Assembly



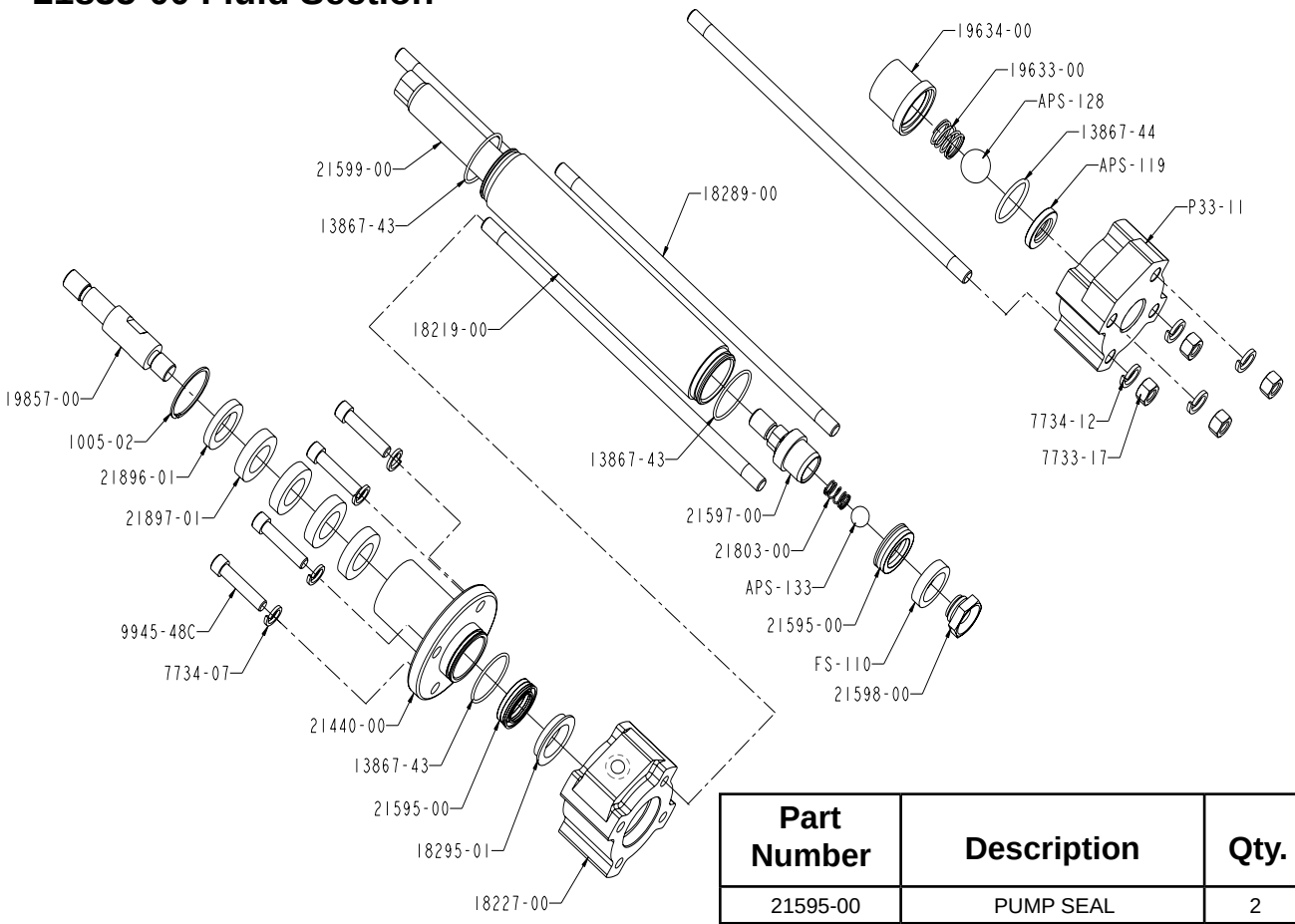
Part Number	Description	Qty.
10599-40F	SCREW	2
19858-00	STAND-OFF	2
19859-00	PUMP MOUNTING PLATE	1
19861-00	PUMP SADDLE	1
19984-00	STAND-OFF	4
20188-12C	SCREW	4
20735-08	ELBOW FITTING	1
21613-48C	SCREW	4
21806-00	LEFT GUARD	1
21807-00	RIGHT GUARD	1
21830-00	PRESSURE SWITCH	2
21835-00	MATERIAL PUMP	2
21836-00	POPPET VALVE	1
22086-02	RETRACT SWITCH KIT	1
22101-00	LIMIT SWITCH	1
23411-00	ELBOW FITTING	2
23461-00	PUMP MOUNTING BRACKET	1
4342-05	ELBOW FITTING	2
6782-23	TEE FITTING	2

Part Number	Description	Qty.
7486-04	FLAT WASHER	8
7486-10	FLAT WASHER	2
7486-27	FLAT WASHER	2
7596-03	FITTING	1
7729-10	NUT	2
7733-06	NUT	2
7734-03	LOCK WASHER	2
7734-06	LOCK WASHER	4
7735-40C	SCREW	2
7957-32C	SCREW	2
7966-17	FITTING	2
8155-40C	SCREW	4
8560-03	FITTING	2
9955-32C	SCREW	2
9672-11	FITTING	1
AM-600-00	6" AIR MOTOR	1

AM-600 Air Motor



21835-00 Fluid Section



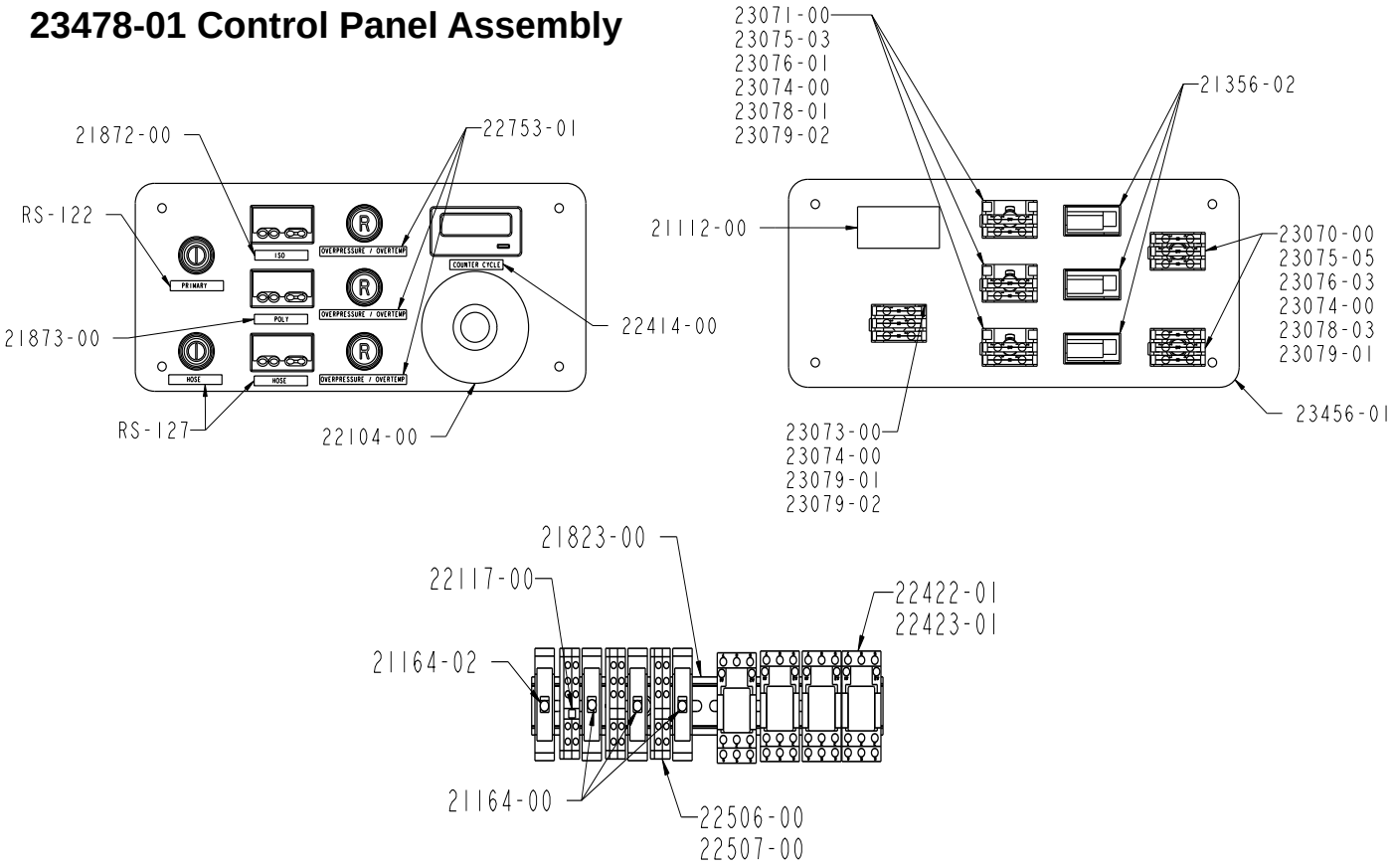
Part Number	Description	Qty.
APS-119	FOOT VALVE SEAT	1
APS-128	CHROME BALL	1
APS-133	SST BALL	1
FS-110	NYLON PISTON GUIDE	1
P33-11	PUMP BASE	1
1005-02	SNAP RING	1
13867-43	O-RING	3
13867-44	O-RING	1
18219-00	PUMP CYLINDER	1
18227-00	AIRLESS PUMP HEAD	1
18289-00	PUMP TIE ROD	4
18295-01	SUPPORT WASHER	1
19633-00	COMPRESSION SPRING	1
19634-00	FOOT VALVE HOUSING	1
19857-00	PUMP SHAFT EXTENSION	1
21440-00	SOLVENT CUP ADAPTER	1

Part Number	Description	Qty.
21595-00	PUMP SEAL	2
21597-00	TRANSFER HOUSING	1
21598-00	TRANSFER SEAT	1
21599-00	PUMP SHAFT	1
21803-00	COMPRESSION SPRING	1
21896-01	PACKING RETAINER	1
21897-01	FELT WIPER	4
7733-17	HEX NUT	4
7734-07	LOCK WASHER	4
7734-12	LOCK WASHER	4
9945-48C	SCREW	4

21845-00 REPAIR KIT		
Part Number	**Description**	**Qty.**
13867-43	O-RING	3
13867-44	O-RING	1
21595-00	PUMP SEAL	2
21896-01	PACKING RETAINER	1
21897-01	FELT WIPER	4
FS-110	PISTON GUIDE	1

REPAIR KIT: 21845-00

23478-01 Control Panel Assembly

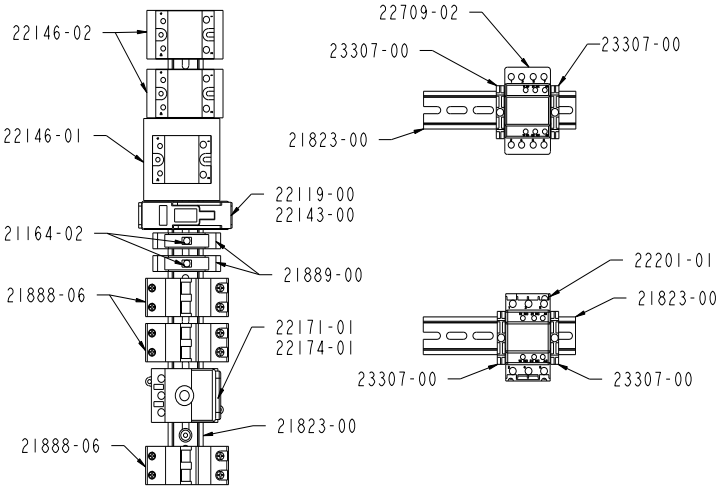


Part Number	Description	Qty.
21112-00	COUNTER	1
21164-00	1/2 AMP FUSE	3
21164-02	2 AMP FUSE	1
21356-02	CONTROL	3
21823-00	DIN RAIL	.875
21872-00	ISO DECAL	1
21873-00	POLY DECAL	1
21889-00	FUSEHOLDER	4
22104-00	EMERGENCY STOP DECAL	1
22117-00	TERMINAL BLOCK JUMPER	2
22414-00	CYCLE COUNTER DECAL	1
22422-01	RELAY	4
22423-01	RELAY SOCKET	4
22506-00	TERMINAL	6
22507-00	END COVER	3
22753-01	OVERPRESSURE DECAL	3
23456-01	CONTROL PANEL	1

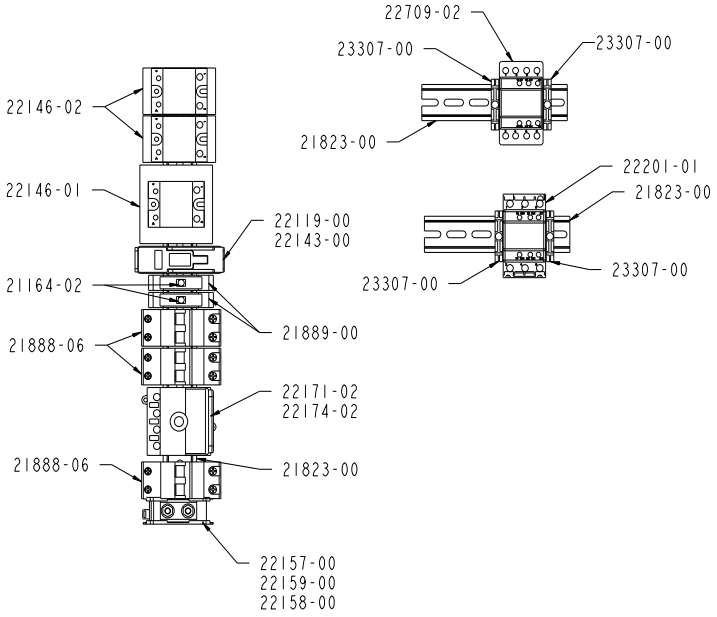
Part Number	Description	Qty.
23486-02	FEMALE PLUG	2
23486-03	FEMALE PLUG	1
23487-02	MALE PLUG	2
23487-03	MALE MALE	1
RS-122	PRIMARY DECAL	1
RS-127	HOSE CONTROL DECAL	2
23070-00	PUSH BUTTON	2
23071-00	PUSH BUTTON	3
23073-00	EMERGENCY STOP	1
23079-01	OPEN CONTACT BLOCK	5
23079-02	CLOSE CONTACT BLOCK	5
23074-00	COUPLING PLATE	6
23075-03	“R” CAP	3
23075-05	”I/O” CAP	2
23078-01	YELLOW LED	3
23078-03	GREEN LED	2
23076-01	YELLOW CAP	3
23076-03	GREEN CAP	2

23479- Electrical Assembly

23479-01
220 V Single Phase



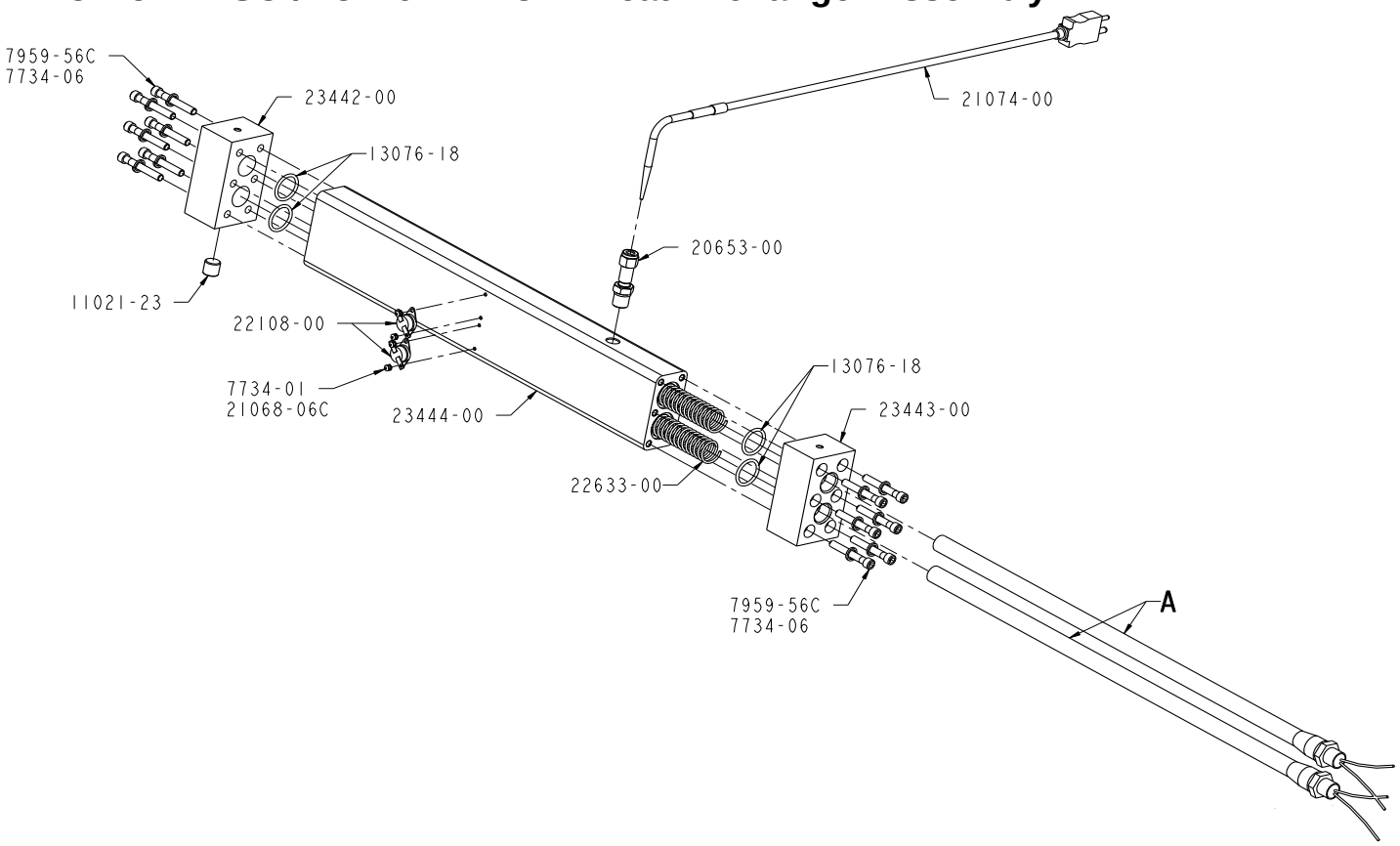
23479-03
380 V Three Phase



	23479-01	
Part Number	**Description**	**Qty**
21164-02	2 AMP FUSE	2
21823-00	DIN RAIL	2.4
21888-06	CIRCUIT BREAKER	3
21889-00	FUSEHOLDER	2
22119-00	FUSE BLOCK	1
22143-00	63 AMP FUSE	1
22146-01	SOLID STATE RELAY	1
22146-02	SOLID STATE RELAY	2
22171-01	ON/OFF SWITCH BLOCK	1
22174-01	ON/OFF SWITCH BLOCK COVER	1
22201-01	MECHANICAL CONTACTOR	1
22709-02	MECHANICAL CONTACTOR	1
23307-00	TERMINAL END CLAMP	4

	23479-03	
Part Number	**Description**	**Qty**
21164-02	2 AMP FUSE	2
21823-00	DIN RAIL	2.4
21888-06	CIRCUIT BREAKER	3
21889-00	FUSEHOLDER	2
22119-00	FUSE BLOCK	1
22143-00	63 AMP FUSE	1
22146-01	SOLID STATE RELAY	1
22146-02	SOLID STATE RELAY	2
22157-00	TERMINAL BLOCK	1
22158-00	TERMINAL BLOCK SPACER	2
22159-00	TERMINAL BLOCK COVER	1
22171-02	ON/OFF SWITCH BLOCK	1
22174-02	ON/OFF SWITCH BLOCK COVER	1
22201-01	MECHANICAL CONTACTOR	1
22709-02	MECHANICAL CONTACTOR	1
23307-00	TERMINAL END CLAMP	4

23445-XX ISO / 23446-XX POLY Heat Exchanger Assembly



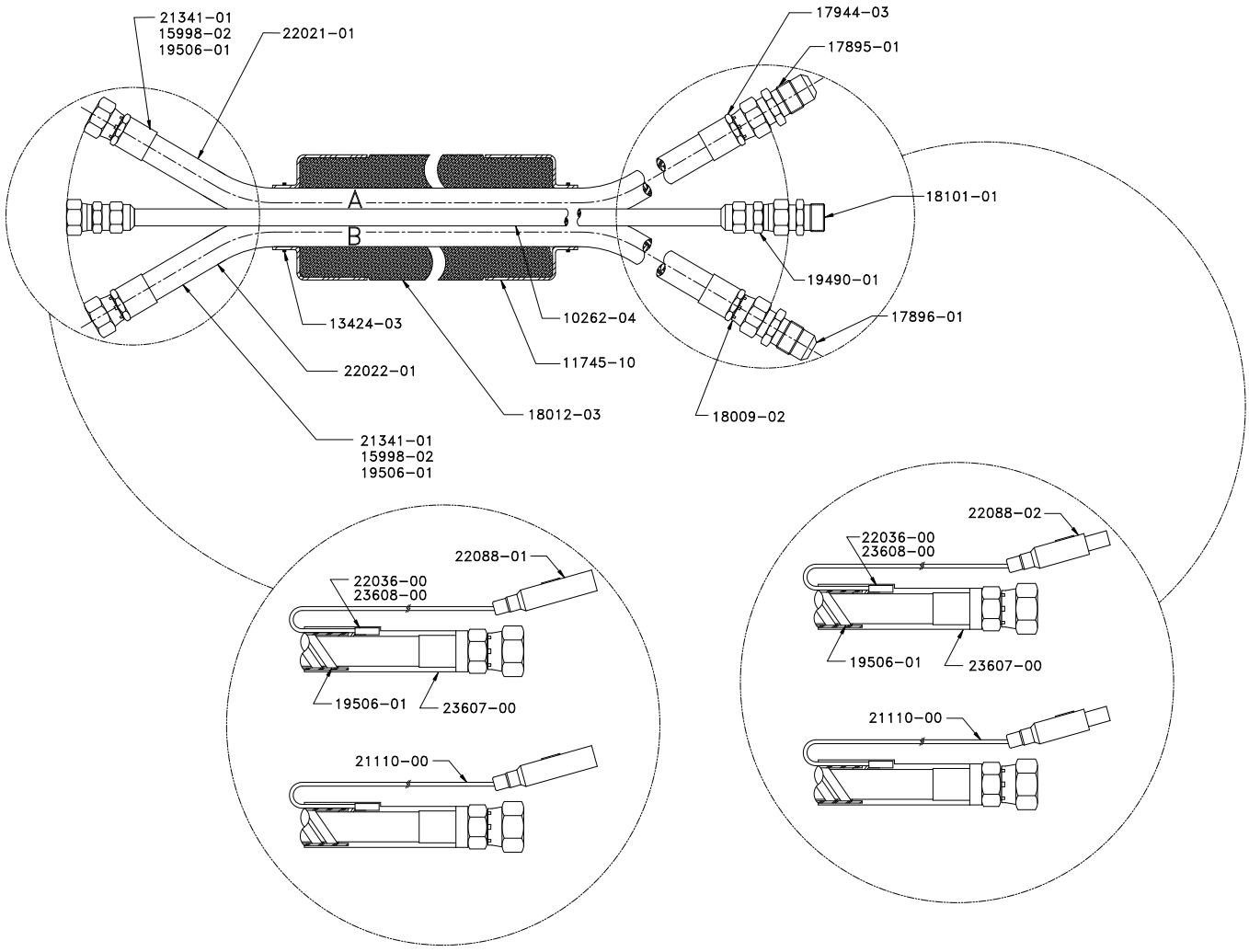
23445-00 ISO / 23446-00 POLY		
Part Number	**Description**	**Qty.**
11021-23	PLUG	1
13076-18	O-RING	4
20653-00	FITTING	1
21068-06C	SCREW	4
21074-00	THERMOCOUPLE	1
22019-00	FIRE ROD	2
22108-00	OVERTEMP SWITCH	2
22633-00	COMPRESSION SPRING	2
23442-00	HEATER FRONT CAP	1
23443-00	HEATER REAR CAP	1
23444-00	HEATER BODY	1
23483-01	ELECTRIC PLUG	2
23484-01	ELECTRIC PLUG	2
23486-01	ELECTRIC PLUG	2
23487-01	ELECTRIC PLUG	2
7734-01	LOCK WASHER	4
7734-06	LOCK WASHER	12
7959-56C	SCREW	12

GLASCRAFT P/N	A	WATTS	QTY.
23445-00	22019-00	1500	2
23445-02	22019-02	750	2

GLASCRAFT P/N	A	WATTS	QTY.
23446-00	22019-00	1500	2
23446-02	22019-02	750	2

23445- REVISION F
23446- REVISION E

22023-01 High Pressure Hose Assembly



Part Number	Description	Qty.
10262-04	NYLON FLUID HOSE	50 ft.
11745-10	HEAT SHRINK TUBING SHRINK	1 ft.
13424-03	CABLE TIE	4
13424-05	CABLE TIE	1
15998-02	NEOPRENE TUBING	100 ft.
17895-01	UNION FITTING	1
17896-01	UNION TUBE FITTING	1
17944-03	HOSE FITTING	2
18009-02	HOSE FITTING	2
18012-03	HEATED HOSE COVER	50 ft.
18101-01	ADAPTER FITTING	1
19490-01	HOSE FITTING	2

Part Number	Description	Qty.
19506-01	COPPER STRIP	6 lbs.
21341-01	MATERIAL HOSE	100 ft.
22036-00	HEAT TAPE END SEAL	4
22088-01	MALE ELECTRIC PLUG ASSEMBLY	2
22088-02	FEMALE ELECTRIC PLUG ASSEMBLY	2
23607-00	COLD SPLICE KIT	4
23608-00	SPLICE CONNECTOR	4

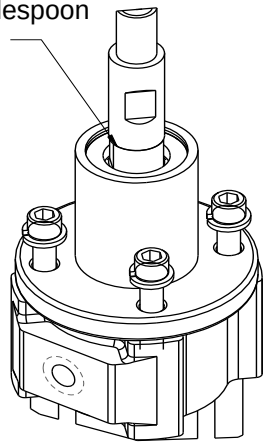
Daily Routine Maintenance

1. Visually inspect the system for leaks.

2. Check desiccant dryer beads to insure they are still purple and have not changed to pink.

3. Check and lube top of the fluid section.

Wipe off residual material and add a tablespoon of DOP,DBP



Weekly Maintenance

1. Place a small amount of grease on the air motor shaft.

2. See related manuals.

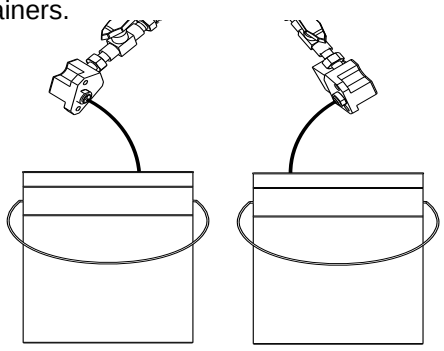
Overhaul Procedure
19875-00 (-01) Pumps / 21835-00 Pumps

1. Dump pressure off system

⚠

Be sure the air and power are off to system.

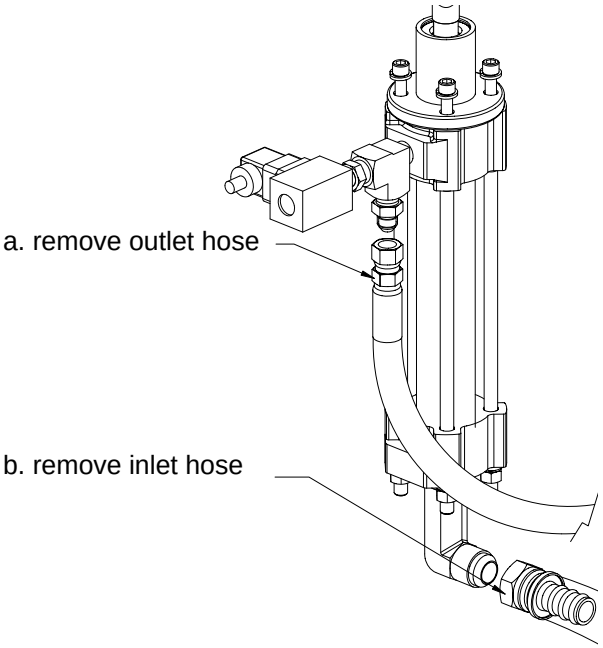
This is achieved by removing side blocks from the gun, opening ball valves and purging materials into clean containers.



2. Flush system side to be rebuilt with suitable solvent.

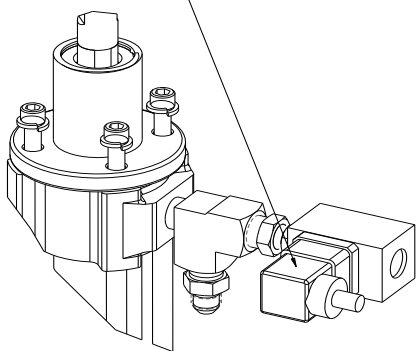
Step three is optional, but it makes the process easier.

3. Disconnect inlet and outlet fittings from the pump.

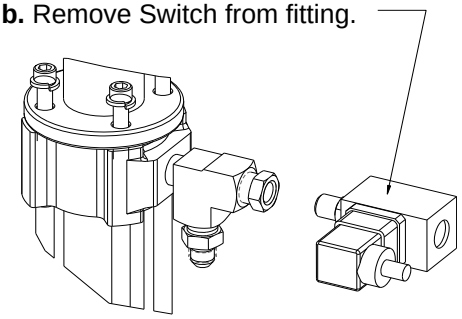


4. Disconnect the din connector from over pressure switch.

a. remove plug



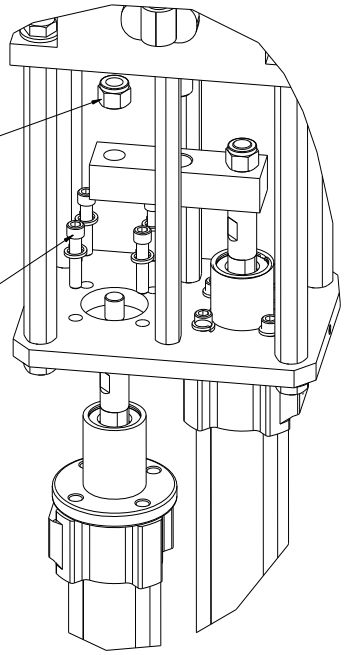
b. Remove Switch from fitting.



⚠

Do not immerse Over Pressure Valve in solvents externally. (Flushing will not affect).

5. Remove pump from base.

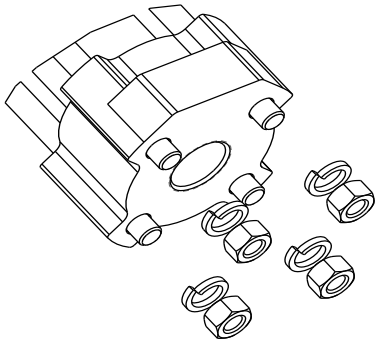


a. remove nylon Lock nut from yoke.

b. remove four bolts

Breaking Down Pump

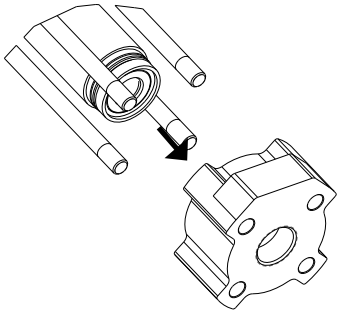
1. Remove four nuts at the base of pump break loose, in a criss-cross pattern.



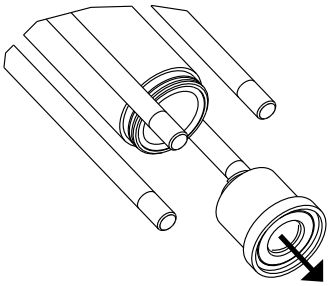
⚠

On P/N 21835-00 pumps, watch out for APS-119, APS-128, & 19633-00. The spring will push these parts out. Observe which side of the APS-119 comes out, Keep right side up for diagnostics.

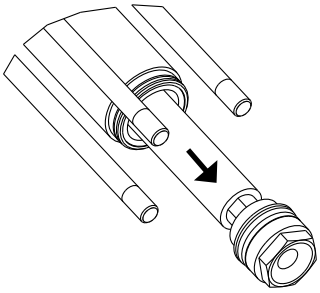
2. Remove Base from Tie Rods.



3. Remove Valve Housing from the cylinder.
P/N UF-118 on 19875-00 pump.
P/N, 19634-00 on 21835-00 pump.

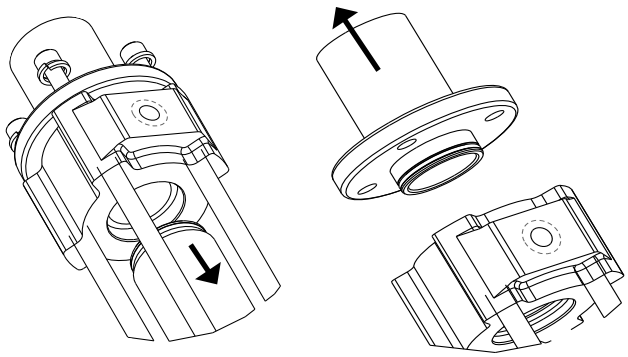


4. Using a rubber mallet, tap shaft out through the bottom of the cylinder, P/N 18219-00.



5. a. Remove cylinder, P/N 18219-00 from pump head P/N 18227-00.

b. Remove Cup Adapter, P/N 21440-00 from pump head P/N 18227-00.

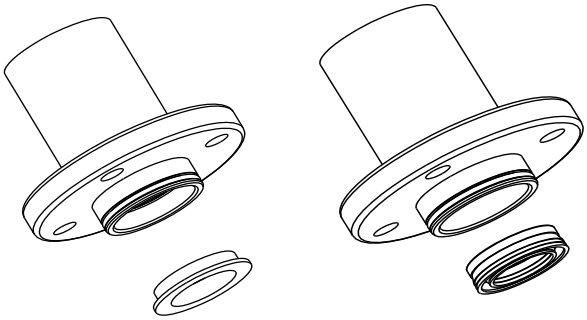


Disassemble Sub-Assemblies

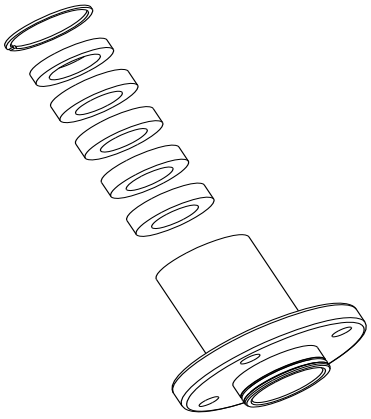
1. Cup Adapter, P/N 21440-00.

a. Remove Support Washer, P/N 18295-01.

b. Remove Seal, P/N 21595-00.



c. Remove Snap Ring, P/N 1005-02, Nylon Washer, P/N 21896-01, & Felt Wipers, P/N 21897-01.

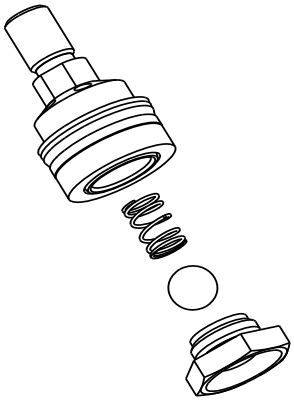


2. Shaft Assembly:

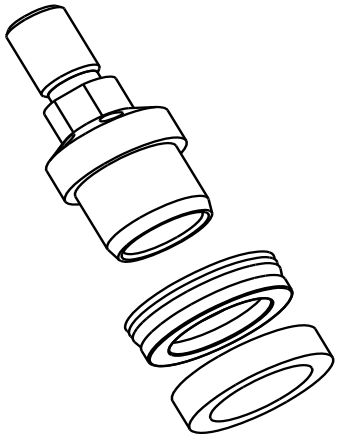
a. Remove P/N 21598-00, Transfer Seat from P/N 21597-00, Transfer Housing.

⚠

P/N APS-133, Ball is loaded with spring tension.



b. Remove FS-110, Piston Guide and P/N 21595-00 Pump Seal.



Cleaning

1. Thoroughly wash all parts in suitable solvent.

2. If parts have any build-up of hardened material, it is acceptable to polish parts with fine sand paper, (1200 grit) or steel wool(000).

3. It is recommended that the cylinder be honed with a fine grit bead honer,(P/N RK5-2).

Inspection

1. The Pump Cylinder, P/N 18219-00 inner wall should be smooth. No pitting or scarring should be seen. If slight scars show in the wall, they must not be able to be felt with a finger nail.

2. The Pump Shaft, P/N 21599-00 must not have any scoring, pitting, or build up of any debris on the shaft.

3. Set the Ball, P/N APS-133 in the Seat, P/N 21598-00 and hold up to a light. Observe for light between the seat surface and the ball.

If a large sliver of light shows, check for debris or scaring on Seat or Ball.

4. P/N APS-128 & P/N APS-119 repeat the above step.

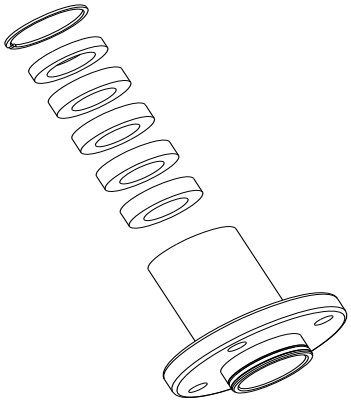
The APS-119 is reversible, you can use either side.

Re-Assemble

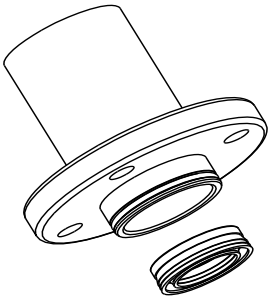
All parts underlined are contained in Repair Kit.

1. Soak P/N 21897-01 in a light weight, non detergent oil, then install in P/N 21440-00.

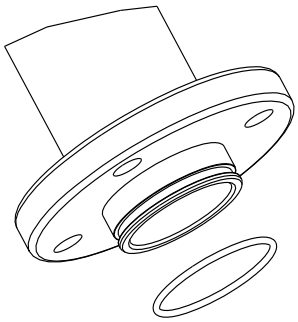
2. Install P/N 21896-01, push down and install Snap Ring P/N 1005-02 in groove.



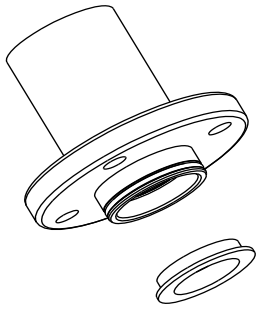
3. On bottom side of P/N 21440-00 install P/N 21595-00 so that the lip faces out



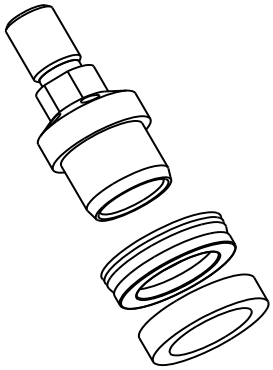
4. Lubricate and install O-Ring, P/N 13867-43 on bottom groove.



5. Install P/N 18295-01 with lip facing toward the seal P/N 21595-00.

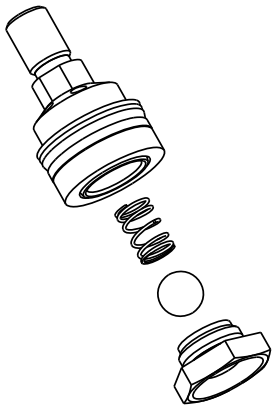


6. Place P/N 21595-00 Seal and P/N FS-110 guide on P/N 21597-00. The lips of the Seal will face away from P/N FS-110.

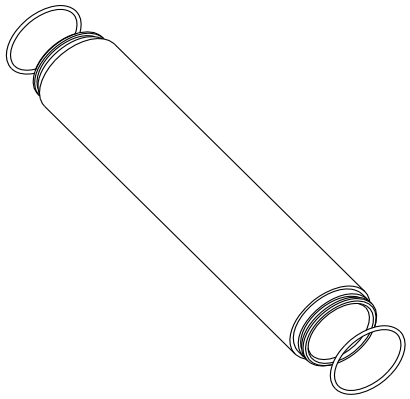


7. Set P/N 21803-00 spring in P/N 21597-00 housing and set APS-133 ball on Spring.

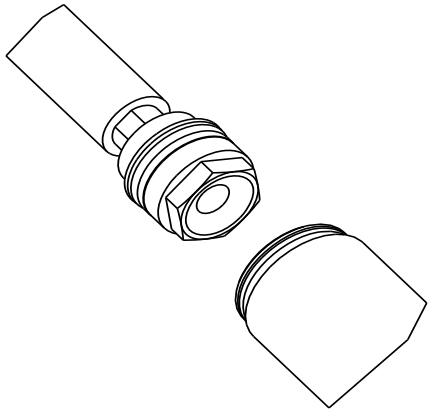
8. Apply blue lock-tite to the threads of P/N 21598-00 and install on P/N 21597-00. Tighten these two parts!



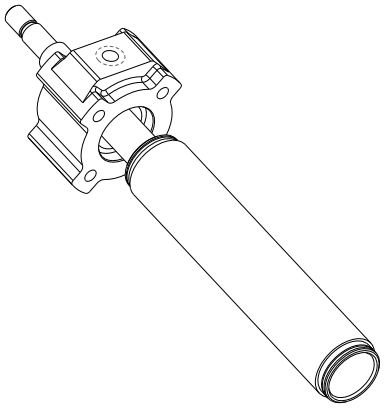
9. Lubricate and install two P/N 13867-49 O- Rings on P/N 18219-00 cylinder.



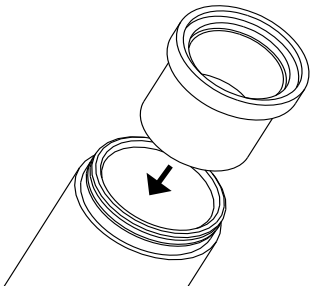
10. Using a light weight non-detergent oil, coat the seal on the shaft assembly and the walls of the cylinder, then install the shaft assembly into the cylinder, leave approximately 4" of the shaft exposed on the top side.



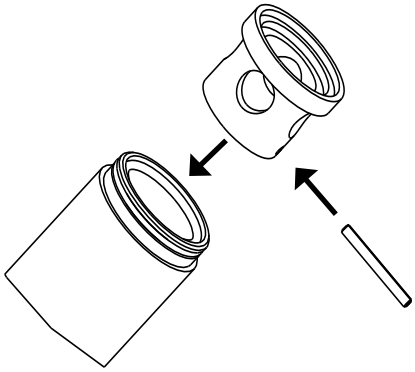
11. Install cylinder/shaft assembly into P/N 18227-00 pump Head, careful not to cut O-Ring for pump P/N 21835-00.



12. With the Pump Assembly upside down, (easy if clamped in a vise) install Foot Valve Housing



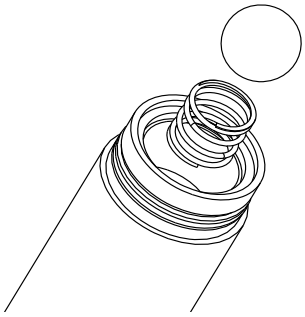
P/N 19634-00. (21835-00 Pump)



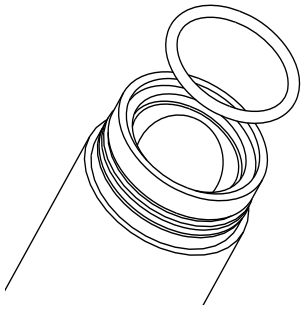
P/N UF-118 & P/N 2594-43 (19875-00 Pump)

13. Set P/N 19633-00 Spring in place and set P/N APS-128 Ball on Spring.

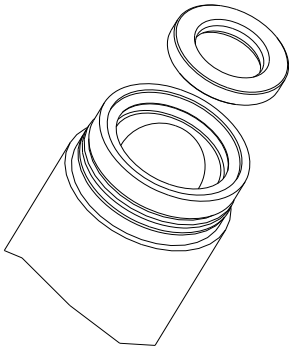
For the 19875-00 pump, set the APS-128 ball in the housing.



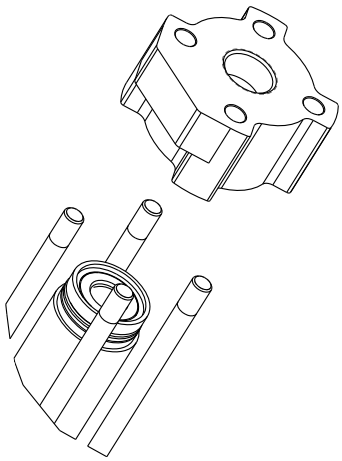
14. Lubricate and install P/N 13867-44 O-Ring in the groove of P/N 19634-00.



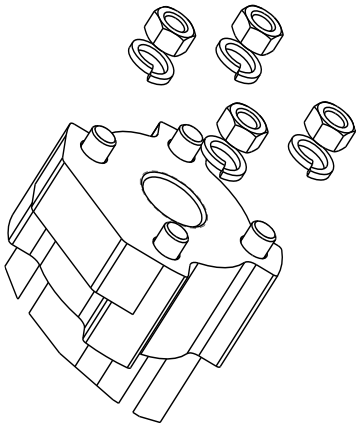
15. Lubricate the outer edge of P/N APS-119 and set top of ball, square and center flats of P/N APS-119 and P/N 19634-00.



16. Gently set P/N P33-11 through P/N 18289-00 Tie Rods and push down square and firm until it sets down over cylinder O-Ring.



17. Continue holding P33-11 down, install (4) P/N 7734-12 Lock Washers and hand thread (4) P/N 7733-17 Nuts. Tighten P/N 7733-17 in a criss-cross pattern until tight.



⚠

Do not place any part of the body in the path of the material spray.
Do not point the gun at or near other personnel.
Do not look into the Mixing Chamber orifice at any time.
Because of the hazardous materials used in this equipment, it is recommended that the operator use an air mask, goggles, protective clothing, and other safety equipment as prescribed by current regulations, recommendations of the chemical sup pliers, and the laws in the area where the equip ment is being used.

The system will dispense liquid at high pressure when Gun Trigger is activated. Read and note WARNINGS contained in this User Manual and the Probler P2 Gun User Manual, GC-1386.

⚠

The Polyol will expand in the Hose if any normal operating pressures are bled off whenever the material is above approximately 75 degrees F. Hot Polyol hoses should never be bled, by any method, to zero pressure for two reasons.
1. The seals in the Gun rely on high pressure to make their seal. The high pressure cannot be maintained if the pumps are attempting to apply this pressure through a hose full of expanded froth; therefore, the Gun seal may leak.
2. Re-starting immediately after hot Polyol has expanded in the system may result in spraying substantial amounts of "bad" foam. This will continue until the expanded Polyol in the primary Heater and the Hose has been completely purged.

Over Pressure System Protection

The system incorporates monitors for high pressure monitoring. These monitoring devices will prevent the system from continued operation if high pressure situations develop.

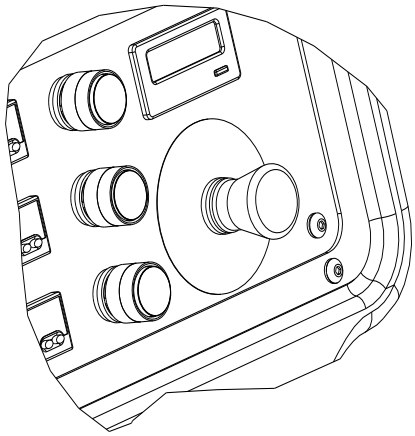
There are pressure sensors located on each propor tioning pump. The high pressure sensor is located at the outbound of the fluid section.

The high pressure monitoring sensor will engage if fluid pressure increases above 2200 psi.

If a high pressure situation develops, the sensor will detect this and immediately engage the hold-in circuit.

This will disengage power to the air motor and will also turn the heaters off.

On the control box panel, there are three yellow lighted push buttons marked over pressure. One of these push buttons will be illuminated after the monitoring sensor engages, indicating where the problem is located (ISO, Poly, or Hose).



In the over pressure situation, the system will remain shutdown until it is manually reset.

At this point, it is necessary to determine if the problem is an over pressure situation.

When the sensor engages, the system will be frozen, giving you the pressure readings at the time the problem was detected.

Inspect the fluid pressure gauges, in an over pressure situation, one of the fluid pressure gauges will be significantly higher than the other gauge.

⚠

When main power to unit is on, the console will have wires that are live. Disconnect or turn off main power source before opening console to make any repairs.

⚠

Before performing any repairs on the system,
ALL AIR and FLUID PRESSURES SHOULD BE RELIEVED TO ZERO (BLEED-OFF)!

Over Pressure Problem Correction

1. Determine if the problem is high pressure related.

2. Relieve system material pressure.

3. Turn off main power.

4. Fix the problem area:
a. Potential high pressure causes:
-Restriction
-Overheating material in static position
-ISO filter at gun

5. Re-start system for operation

Once the power has been turned off and problem solved, and the main power is turned on again, the over pressure lighted buttons will automatically be reset.

⚠

If you do not understand the electrical hook-up de scribed above, consult your local GlasCraft distributor OR a qualified electrician.

It is recommended that a qualified, licensed electrician should install power to the supply disconnect.

You should always follow all local or national electrical codes.

⚠

Disconnect power source BEFORE attempting any repairs or opening the Control Boxes. Access to internal parts is limited to qualified personnel ONLY!
Place Main Power Switch in OFF position BEFORE disconnecting power cables. This equipment is not approved for use in hazardous locations as set forth in the National Electrical Code Article 500 and Sub-Part "S" of the OSHA Standards.

Material Or Mechanical Problem

Troubleshooting Procedure

By following this procedure, you should be able to locate and cure problems easily. Remember, however, that a successful operator must know:

- WHAT GOOD MATERIAL LOOKS LIKE.
- HOW THE EQUIPMENT NORMALLY OPERATES.
- WHAT PATH THE MATERIALS FOLLOW THROUGH THE EQUIPMENT.
- KNOWLEDGE OF THESE TROUBLESHOOTING PROCEDURES.

Always start with step one, never skip any portion of these procedures. The material pressure gauges are to be used for troubleshooting purposes only. The pressures registered on one gauge will not necessarily match the other. This difference can be caused by variance in materials, temperatures, viscosities, etc.

1. Identify the missing material.

2. Check the material pressure gauge on the missing material side.

a. If the missing material gauge reads HIGHER than normal, there is a RESTRICTION problem between the gauge and the Mixing Chamber tip in the Gun.

b. If the missing material gauge reads LOWER than normal, there is a STARVATION problem between the gauge and the material supply system.

Problems may be cyclic in that they will appear first on only one stroke of the Proportioning Pump. Check the pressure gauges during one of these bursts of missing materials and always stop spraying while you are getting a burst of good material.

3. Concern yourself only with the material pressure on the missing material side. In troubleshooting a STARVATION problem where the pressure gauge on the missing material side is LOWER than normal, start at the point farthest from the unit and work forward. Check the obvious and easy things first.

A. MATERIAL DRUMS
1. Material in drums?
2. Material temperature?
   a. If the material is to cold, especially at the bottom of the drum, it will raise the viscosity of the material and stall Transfer Pumps.

B. OPTIONAL TRANSFER PUMP(S)
1. Is it operating?
2. Is air turned on to Transfer Pump?
3. Regulated pressure where it should be?
4. Severe contamination of pump shaft on isocyanate side. This indicates that the pump shaft is not being lubricated.
5. Check Filter of Transfer Pump.
6. Before diagnosing a faulty Transfer Pump, be sure and check all items just listed under Transfer Pump.

C. FILTER ASSEMBLY
1. Check fluid filter at inlet to Proportioning Pumps if applicable.

D. PROPORTIONING PUMPS
1. Determine whether the burst appears on the Pump's up or down stroke.
   a. If burst appears on UP stroke, check UPPER Ball Seat and Cups.
   b. If burst appears on DOWN stroke, check LOWER Ball Seat

Follow the procedures in the order given. Remember that repairs should be made as soon as possible. Don't leave the unit open to air any longer than necessary, as this will lead to further problems, such as moisture entering the system and causing the isocyanate to crystallize.

After the unit has been exposed to the atmosphere, it should be run long enough to displace the material that was in the unit when it was opened up.
NEVER inspect filter assemblies at time of shut-down!

4. In troubleshooting, a restriction problem where the material pressure gauge on the missing material side is higher than normal, start at the point farthest from the unit and work backward. Check obvious and easy things first.

⚠
Before performing any repairs on the Gun, ALL AIR and FLUID PRESSURES SHOULD BE RELIEVED TO ZERO (BLEED-OFF)!

A. GUN
1. Side Block Material Valve turned on?
2. Bore hole of Mixing Chamber clean?
3. Filter Strainer Screen clean?
4. Side hole in Mixing Chamber clean?

B. MATERIAL TEMPERATURE
1. Too high a temperature on resin side can cause a blowing agent to pre-expand in either the Hose or the Primary Heater.

C. HOSES
1. Make sure that the Hoses are not plugged.

TROUBLESHOOTING A POOR SPRAY PATTERN

To troubleshoot a poor spray pattern, you must understand the factors that affect the spray pattern.

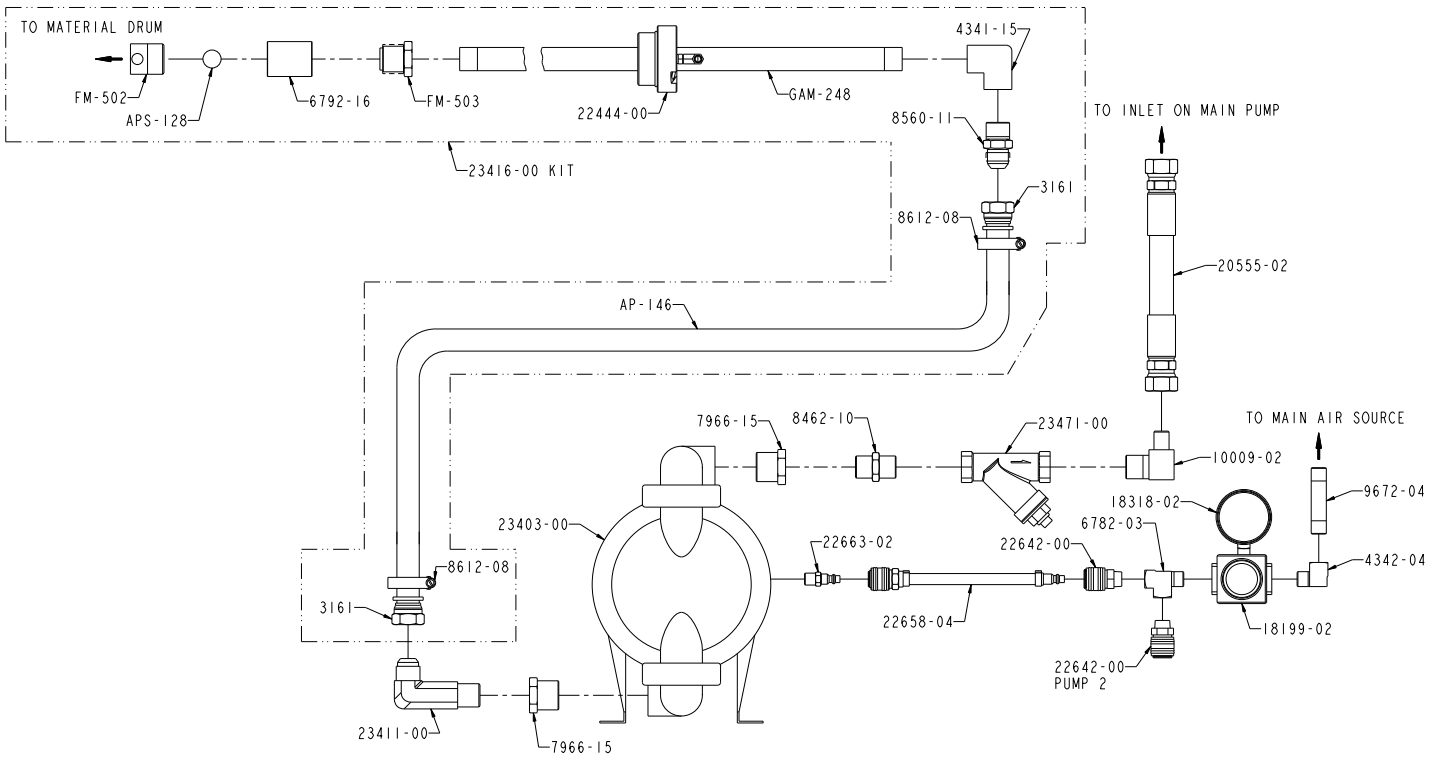
A. TEMPERATURE
1. Too warm a material temperature will cause a separation (fingering) in the pattern.
2. Too cold a material temperature will cause a stream effect.

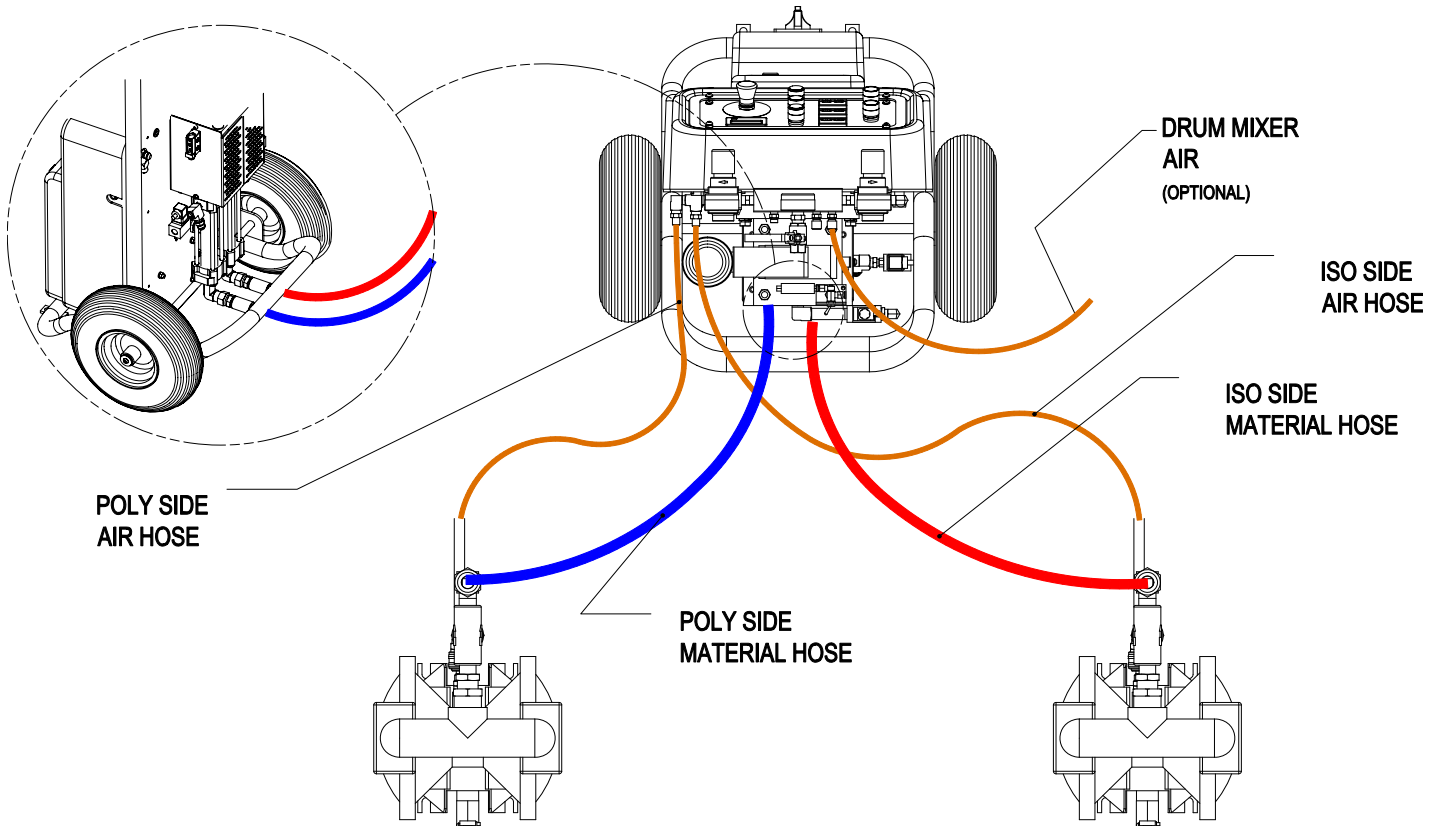
B. PRESSURE
1. Too high a pressure will cause excessive overspray and/or separation (fingering).
2. Too low a pressure will cause a stream effect.

C. CONTAMINATION IN THE MIXING CHAMBER
1. A foreign object in the Mixing Chamber will cause a poor pattern.

Correct problem(s) immediately!

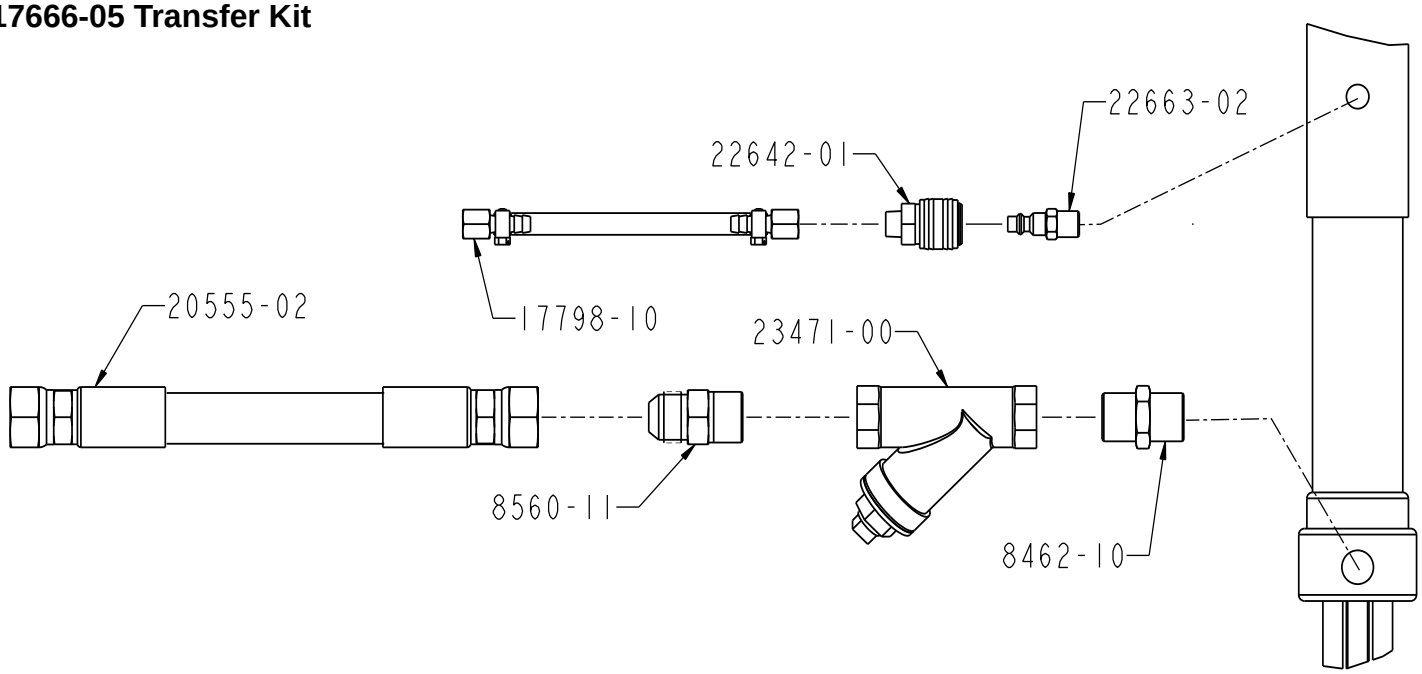
17666-04 Diaphragm Transfer Pump Kit

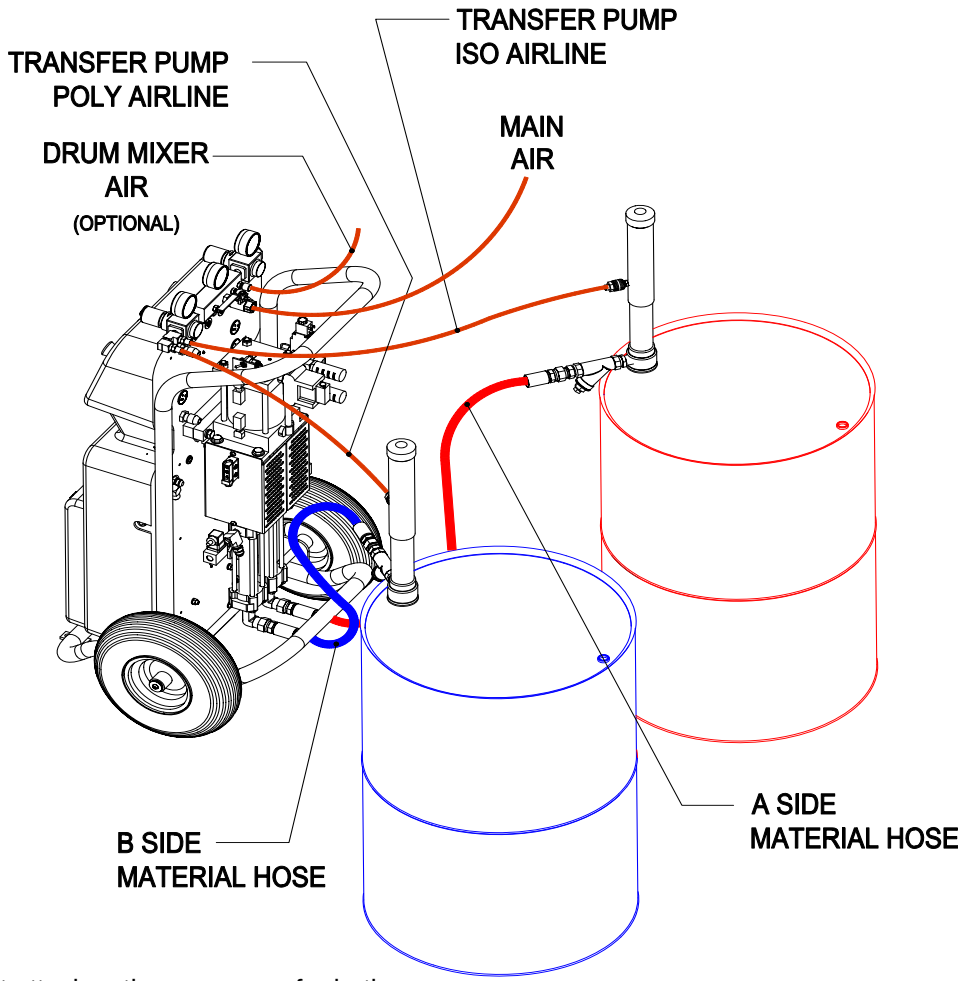




The transfer kit attaches the same way for both ISO & POLY side. Use teflon tape on NPT threads.

17666-05 Transfer Kit





The transfer kit attaches the same way for both ISO & POLY side. Use teflon tape on NPT threads.

Safe Handling And Use Of Urethane Foam Equipment

Introduction

Any tool, if used improperly, can be dangerous. Safety is ultimately the responsibility of those using the tool. In like manner, safe operation of polyester processes is the responsibility of those who use such processes and those who operate the equipment. This manual outlines procedures to be followed in conducting polyester operations safely.

All personnel involved in dispensing operations should read and understand this manual. It is most important that equipment operators, maintenance, and supervisory personnel understand the requirements for safe operation.

This manual cannot answer every circumstance; each user should examine his own operation, develop his own safety program and be assured that his equipment operators follow correct procedures. GlasCraft hopes that this manual is helpful to the user and recommends that the precautions in this manual be included in any such program.

Urethane foam systems are comprised of several different chemical compounds, some of which may be hazardous if improperly used.

⚠ CAUTION

Particular caution must be taken with respect to the vapors released during the use of urethane foam systems.

Isocyanate compounds are used in urethane foaming operations. The medical history of persons who may be exposed to such isocyanates should be examined. It is recommended that individuals with a history of chronic respiratory ailments should avoid exposure to all isocyanates.

In addition to the manual, GlasCraft recommends that the user consult the regulations established under the Occupational Safety & Health Act (OSHA), particularly the following sections:

- 1910.94 Pertaining to ventilation.
- 1910.106 Pertaining to flammable liquids.
- 1910.107 Pertaining to spray finishing operations, particularly Paragraph (m)

Organic Peroxides and Dual Component Coatings. Local codes and authorities also have standards to be followed in the operation of your spraying equipment. Chemical manufacturer's recommendations should be obtained and considered. Your insurance carrier will be helpful in answering questions that arise in your development of safe procedures.

Personnel Safety Equipment

GlasCraft recommends the following Personal Safety Equipment for conducting safe operations of the Polyester Systems:

GlasCraft recommends that the user consult the state and local regulations established for all Safety equipment listed.

Operating Safely

In operating urethane foam equipment safely, user should make every effort to:

1. Handle chemicals safely.
2. Provide adequate ventilation.
3. Provide adequate safety equipment (gloves, respirators, safety glasses, protective clothing, etc.) for operators and all others working in areas where they may be exposed to the chemicals or their vapors.
4. Avoid operating equipment which has given any indication of malfunction.
5. Become fully acquainted with the equipment and chemicals used.

Handling Chemicals Safely

Storage of polyisocyanates, diamines, and organic solvents should be isolated and restricted to specially constructed storage rooms. Store chemicals in original containers and according to manufacturer's recommendations listed on the container. Maximum ambient temperatures to which such chemicals should be exposed are specified by the manufacturer and MUST NOT be exceeded either in the storage area or in the spraying or pouring area.

To avoid moisture contamination, don't open containers until ready for use. After use, the remaining material should be re-sealed in the original container and stored in areas away from moisture.

During clean-up of spilled isocyanate component, respirators, gloves and eye protection must be worn. Isocyanates which have been spilled can be controlled by covering them with dry sawdust and/or other absorbent, inert materials. Care should be taken to avoid skin contact. The absorbent material and the absorbed isocyanate should be collected promptly, placed in an open-top container, and treated with dilute solutions of ammonium hydroxide and/or alcohol. While being treated in this manner, the material should be in an adequately ventilated area. Clothing on which any material has been spilled should be removed immediately, and cleaned before being worn again.

Clean-Up Solvents

⚠ WARNING

A hazardous situation may be present in your pressurized fluid system!

Halogenated Hydrocarbon Solvents can cause an explosion when used with aluminum or galvanized components in a closed (pressurized) fluid system (pumps, heaters, filters, valves, spray guns, tanks, etc.).

The explosion could cause serious injury, death and/or substantial property damage.

Cleaning agents, coatings, paints, etc. may contain Halogenated Hydrocarbon Solvents.

Some GlasCraft spray equipment includes aluminum or galvanized components and will be affected by Halogenated Hydrocarbon Solvents.

There are three key elements to the Halogenated Hydrocarbon (HHC) solvent hazard.

1. **The presence of HHC solvents.** 1,1,1-Trichloro ethane and Methylene Chloride are the most common of these solvents. However, other HHC solvents are suspect if used; either as part of paint or adhesives formulation, or for clean-up or flushing.

2. **Aluminum or Galvanized Parts.** Most handling equipment contains these elements. In contact with these metals, HHC solvents could generate a corrosive reaction of a catalytic nature.

3. **Equipment capable of withstanding pressure.** When HHC solvents contact aluminum or galvanized parts inside a closed container, such as a pump, spray gun, or fluid handling system, the chemical reaction can, over time, result in a build-up of heat and pressure, which can reach explosive proportions.

When all three elements are present, the result can be an extremely violent explosion. The reaction can be sustained with very little aluminum or galvanized metal: any amount of aluminum is too much.

The reaction is unpredictable. Prior use of an HHC solvent without incident (corrosion or explosion) does NOT mean that such use is safe. These solvents can be dangerous alone (as a clean-up or flushing agent) or when used as a component of a coating material. There is no known inhibitor that is effective under all circumstances. Furthermore, the mixing of HHC solvents with other materials or solvents, such as MEK, alcohol, and toluene, may render the inhibitors ineffective.

The use of reclaimed solvents is particularly hazardous. Reclaimers may not add any inhibitors, or may add incorrect amounts of inhibitors, or may add improper types of inhibitors. Also, the possible presence of water in reclaimed solvents could feed the reaction.

Anodized or other oxide coatings cannot be relied upon to prevent the explosive reaction. Such coatings can be worn, cracked, scratched, or too thin to prevent contact. There is no known way to make oxide coatings or to employ aluminum alloys, which will safely prevent the chemical reaction under all circumstances.

Several solvent suppliers have recently begun promoting HHC solvents for use in coating systems. The increasing use of HHC solvents is increasing the risk. Because of their exemption from many State Implementation Plans as Volatile Organic Compounds (VOC's), their low flammability hazard, and their not being classified as toxic or carcinogenic substances, HHC solvents are very desirable in many respects.

⚠ WARNING

If you are now using Halogenated Hydrocarbon solvents in pressurized fluid systems having aluminum or galvanized wetted parts, IMMEDIATELY TAKE THE FOLLOWING STEPS:

- *Empty system, shut-off, completely depressurize in accordance with equipment service instructions.*
- *Remove equipment from service, disassemble in accordance with equipment servicing instructions.*
- *Inspect all parts for corrosion and/or wear. Replace any damaged parts.*
- *Thoroughly clean all parts of the equipment with a non-halogenated solvent and reassemble in accordance with equipment servicing instructions.*
- *Flush equipment with non-halogenated solvent.*
- *Do NOT reuse equipment with HHC solvents or with materials containing such solvents.*
- *Material suppliers and/or container labels should be consulted to ensure that the solvents used are compatible with your equipment.*

GlasCraft is aware of NO stabilizers available to prevent Halogenated Hydrocarbon solvents from reaction under all conditions with aluminum components in a closed fluid system.

TAKE IMMEDIATE ACTION...

Halogenated Hydrocarbon solvents are dangerous when used with aluminum components in a closed fluid system. Consult your material supplier to determine whether your solvent or coating contains Halogenated Hydrocarbon Solvents.

GlasCraft recommends that you contact your solvent supplier regarding the best non-flammable clean-up solvent with the heat toxicity for your application.

If, however, you find it necessary to use flammable solvents, they must be kept in approved, electrically grounded containers.

Bulk solvent should be stored in a well-ventilated, separate building, 50 feet away from your main plant.

You should allow only enough solvent for one day's use in your laminating area.

"NO SMOKING" signs must be posted and observed in all areas of storage or where solvents and other flammable materials are used.

Adequate ventilation (as covered in OSHA Section 1910.94 and NFPA No. 91) is important wherever solvents are stored or used, to minimize, confine and exhaust the solvent vapors.

Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107.

Toxicity of Chemicals

GlasCraft recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No. 33, Chapter 14, and NFPA No. 91.

Contact your chemical supplier(s) and determine the toxicity of the various chemicals used, as well as the best methods to prevent injury, irritation and danger to personnel.
Also determine the best methods of first aid treatment for each chemical used in your plan

First Aid

If chemicals containing isocyanate are splashed on the skin, they can produce ill effects. Steps to counteract such effects should be started immediately.

Apply Tincture of Green Soap, full strength, to the contaminated area. If Tincture of Green Soap is not immediately available, wash the exposed area repeatedly with soap and water. Soap and water is not as desirable as using Tincture of Green Soap because many isocyanate components are not easily dissolved in water. In addition, soap and water does not form a barrier to the isocyanate.

After approximately two to four minutes, wash off the Tincture of Green Soap with water. If there is still an indication of isocyanate present, repeat the application. If the isocyanate contamination is on the facial area, care must be taken to avoid getting the Tincture of Green Soap in the eyes.

If the person develops breathing difficulties, oxygen should be administered. Quite often the exposed person will experience residual effects such as coughing spells**.** CONTACT PHYSICIAN IMMEDIATELY.

⚠ WARNING

Contact a doctor immediately in the event of an injury and give him the information you have collected. If your information includes first aid instructions, administer first aid immediately while you are contacting the doctor.

If a person accidentally swallows isocyanate, large amounts of water should be swallowed immediately. Vomiting should then be induced by patient sticking his finger down his throat, or by swallowing large quantities of warm salt water or warm soapy water. After vomiting, more water should be taken to dilute isocyanate further. CONTACT PHYSICIAN IMMEDIATELY.

Ventilation

⚠ WARNING

Hazardous concentrations of some chemical vapors exist before they can be smelled. Chemical component suppliers should be contacted to determine at what concentrations the vapors of the chemicals they supply become dangerous, and the procedures and equipment needed to detect such dangerous concentrations. Such equipment should be obtained.

Adequate ventilation must be provided in any area where foam chemicals are sprayed or poured, and wherever the material containers are opened.

In industrial applications, foaming operations should be restricted to specific areas, and proper ventilation should be provided in these areas to prevent chemical vapors from spreading. Spray foaming operations MUST be restricted to a spray booth where a minimum exhaust of 100 feet per minute at the face of the booth is provided. Special care should be taken to prevent unsuspecting personnel both inside and outside of the plant from being exposed to chemical vapors. The chemical vapors should be exhausted to atmosphere in such a manner and at a sufficiently low concentration that personnel outside the plant are not exposed to dangerous concentrations of chemical vapors. Refer to OSHA Standards, sub-part G, 1910.107 and particularly sub-section (m) for Federal standards. State and local authorities may have applicable statutes or regulations concerning ventilation.

In contractor applications (for example, at a construction site, inside building or other enclosed space), the forced ventilation normally provided is likely to be inadequate. These applications, therefore, usually REQUIRE the use of forced, fresh air respirators for all persons in the areas where foaming operations are conducted or where the chemical vapors are likely to spread.

In industrial and contractor applications, it is advisable to run frequent tests to determine the exact concentration of isocyanate vapor in the air. Industrial equipment is available for making such determinations. Your chemical supplier can recommend such equipment and procedures.

Proper Safety Equipment

All persons spraying or working is areas where forced air ventilation is not adequate to remove isocyanate vapors from the air MUST use an approved (U.S. Bureau of Mines) fresh air supplied respirator.

Respirators should be regularly inspected, cleaned and disinfected according to good practices. Records must be kept of the inspections. The user MUST have a medical clearance indicating that he can safely use a respirator.

Respirators must fit securely; beards prevent a tight seal around the face. Eye glasses have to be given special attention and contact lenses are prohibited.

Safety goggles, gloves and other protective devices are suggested for operators of foaming equipment. Refer to OSHA Standards, sub-part 1, 1910.132, 1910.133 and 1910.134 for Federal standards.

IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE PRECAUTIONS OR ANY SERVICE OR OPERATION PROCEDURES, CALL YOUR GLASCRAFT DISTRIBUTOR OR GLASCRAFT, INC.

NOTICE

All statements, information and data given herein are believed to be accurate and reliable but are presented without guaranty, warranty or responsibility of any kind expressed or implied. The user should not assume that all safety measures are indicated or that other measures are not required.

GlasCraft
DISPENSING EXCELLENCE

5845 WEST 82nd STREET, SUITE 102
INDIANAPOLIS, INDIANA 46278 U.S.A.

PHONE (317) 875-5592 FAX (317) 875-5456

Section 4 - Safety Information: Notes

GLASCRAFT, INC. ("GlasCraft") warrants to the original Purchaser of GlasCraft manufactured equipment and parts, that all GlasCraft manufactured equipment and parts will conform to their published written specifications and be free of defects in workmanship and material for a period of one (1) year from the original date of installation. GlasCraft makes no warranty to anyone other than the original Purchaser.

If any GlasCraft manufactured part or equipment is found to be defective in workmanship or material within the one-year period from the date of installation, as determined solely by GlasCraft, GlasCraft, in its sole discretion, will either repair or replace the defective part or equipment at GlasCraft's cost, including freight charges both ways, or credit or refund the purchase price for the defective equipment or part.

A warranty claim will be honored only when:

1. GlasCraft has been informed, in writing, of any such defect in workmanship or material within ten (10) days after discovery by the original Purchaser;

2. An official of GlasCraft has issued a return authorization number; and

3. The claimed defective equipment or part has been returned to GlasCraft by the original Purchaser, freight prepaid (with proper return authorization number(s) attached), to: GlasCraft, Inc., 5845 West 82nd Street, Suite 102, Indianapolis, IN 46278, U.S.A.

This warranty shall not apply to any equipment or parts that have been altered or repaired by anyone other than GlasCraft or to defects or damage resulting from improper installation, misuse, negligence, accident, or use not specified by GlasCraft. This warranty shall not apply to any equipment where any parts or components were replaced by any parts or components not manufactured or supplied by GlasCraft. The decision by GlasCraft shall be conclusive and binding on Purchaser.

GlasCraft does not warrant that any equipment or parts sold to Purchaser meet or comply with any local, state, federal, or other jurisdiction's regulations or codes. GlasCraft does not warrant that any equipment or part sold to Purchaser, when used individually or in concert with any other part, equipment, device, component or process, does not infringe on any patent rights of any third party. GlasCraft only warrants that it has no specific knowledge of any such infringement.

GlasCraft makes no warranty as to any parts or equipment manufactured by others. Purchaser shall look solely and only to the manufacturer of such parts or equipment with respect to any warranty claims. GlasCraft hereby assigns to Purchaser the original manufacturer's warranties to all such equipment and parts, to the full extent permitted.

THE AFORESAID WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. SPECIFICALLY THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH WARRANTIES ARE SPECIFICALLY DISCLAIMED.

GlasCraft shall not be liable for any loss or expense resulting from damage or accidents caused by improper use or application of materials manufactured or sold by GlasCraft or its distributors or agents.

UNDER NO CIRCUMSTANCES SHALL GLASCRAFT'S LIABILITY EXCEED THE AMOUNT PURCHASER PAID FOR THE CLAIMED DEFECTIVE EQUIPMENT OR PART. UNDER NO CIRCUMSTANCES SHALL GLASCRAFT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR LOST PROFITS.

No action arising from or relating to any goods manufactured by or purchased from GlasCraft may be brought more than one (1) year after the cause of action accrues.

Thank You for selecting GlasCraft spray equipment

Should you have any questions or need technical assistance, contact your factory authorized GlasCraft distributor.

Distributor: _____

Phone: _____

Contact: _____

For any issues your distributor cannot address, the GlasCraft technical service department is always available to assist you with the operation of your spray equipment. To help our technical representatives expedite your call and better address your questions, please have the following information ready and available when you phone GlasCraft.

*** If your questions are not urgent, You can e-mail all correspondence to service@glascraft.com**

Model: _____
Serial number: _____

Type of spray gun: _____
Serial number: _____

Is your equipment:

Single phase: _____ Three phase _____

What is the inbound voltage
to your equipment: _____

Temperature setting ISO: _____

Temperature setting POLY: _____

Temperature setting HOSE: _____

For Air Powered Systems:

Air compressor size: _____
CFM generated: _____

Pressure at the system:

Hydraulic _____ Pneumatic _____

Dynamic fluid pressure:

ISO _____ POLY _____

Spray gun chamber size: _____

Material being sprayed: _____

Viscosity: ISO _____ POLY _____

Approximate material temperature: _____

For Your Reference

DISPENSING EXCELLENCE

Date Purchased _____

Distributor _____

_____

Contact _____

Phone _____

E-mail _____

GlasCraft manufactures a complete line of polyurethane foam and polyurea coating spray systems. If your application is in-plant or a field contractor - GlasCraft has a system package to meet your requirements.

GUARDIAN - AIR POWERED / A5 & A6 SERIES EQUIPMENT

- **. 6000 OR 12000 WATTS OF HEAT**
- **. 1600, 2200, OR 3000 PRESSURE SET-UPS AVAILABLE**

MH, MH II, & MH III HYDRAULIC POWERED SYSTEMS

- **. UP TO 45 LBS / MINUTE OUTPUT**
- **. EXCELLENT PERFORMANCE AND RELIABILITY**

GUARDIAN MMH - MOBILE MODULAR HYDRAULIC SYSTEMS

- **. SPECIFICALLY DESIGNED FOR ANY TYPE OF SPRAY RIG**
- **. GIVE COMPLETE UTILIZATION OF FLOOR SPACE IN MOBILE RIG**

PROBLER P2 SPRAY GUN

- **. IMPINGEMENT MIX / AIR PURGE**
- **. OPTIONAL NOZZLE FOR SPRAYING STUD WALLS, POURING & STREAM JET**

For more information concerning any of these GlasCraft products,
contact your local authorized GlasCraft distributor or visit www.glascraft.com

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GC-1398
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